DOCUMENT RESUME

ED 301 671 CE 051 407

TITLE Agricultural Education Service Area Resource. Competency-Based Education.
INSTITUTION Henrico County Public Schools, Glen Allen, VA. Virginia Vocational Curriculum Center.
SPONS AGENCY Virginia State Dept. of Education, Richmond. Div. of Vocational and Adult Education.
PUB DATE 84
NOTE 167p.; For a related document, see ED 300 574.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Agricultural Education; Career Education; *Classroom Techniques; Competency Based Education; *Material Development; *Occupational Information; Postsecondary Education; *Recordkeeping; Student Organizations; Student Records

ABSTRACT

This resource contains all available occupational, student organization, classroom management, and competency documentation information for agricultural education programs taught in Virginia. Its primary purpose is to assist teachers and curriculum specialists in developing instructional materials that meet competency-based education (CBE) standards and requirements for vocational and adult programs. Section I on occupational information provides specific information concerning the occupational nature of the work and references to sources listing places of employment, training, qualifications, employment outlook, working conditions, and salary. Section II provides information about the role of student organizations in vocational education and about the specific activities of the Future Farmers of America. Section III illustrates samples of classroom management systems developed by teachers incorporating competency-based vocational education techniques into their courses and programs, including lesson plans, student task sheets, learning contracts, and self-contained learning systems. Section IV contains information on the characteristics of grading and recording systems for CBE. It contains sample classroom, permanent record, and recording systems. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED301671

AGRICULTURAL EDUCATION

SERVICE AREA RESOURCE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

F. D. Armstrong

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Commonwealth of Virginia
Department of Education
Vocational and Adult Education
Richmond, Virginia 23216

1984

VEDS/407

Review Draft

COMPETENCY-BASED CBE EDUCATION

BEST COPY AVAILABLE

Agricultural Education Service Area Resource

Developed by

Virginia Vocational Curriculum Center
Henrico County Public Schools
Department of Vocational and Community Education
Glen Allen, Virginia 23060

In cooperation with

Agricultural Education Service
Vocational and Adult Education
Virginia Department of Education
Richmond, Virginia 23216

1984

FOREWORD

In the next decade, businesses and industries in Virginia will require large numbers of skilled workers. Therefore, vocational education at the secondary and postsecondary levels will have the responsibility of preparing individuals for a variety of occupations.

Competency-based education (CBE) provides the preparation students need for entry into the Virginia work force. The CBE practice of recording competencies developed by students helps them to make a smooth transition between secondary and postsecondary programs when both levels of education are required for career training. In addition, CBE is effective in retraining workers who have been displaced because of changing technology.

This resource will assist teachers and administrators in developing instructional materials that meet the needs of students and industry and comply with the Virginia CBE standards for vocational and adult education.

S. John Davis
Superintendent of Public Instruction

Melvin H. Garner
Administrative Director
Vocational and Adult Education

Johnas F. Hockaday
Chancellor
Virginia Community College System

ACKNOWLEDGMENTS

The development of this service area resource was accomplished through the joint efforts of the Virginia Department of Education and the Virginia Vocational Curriculum Center. Glenn A. Anderson, Supervisor for Agricultural Education, is recognized for his time and dedication to this project. Recognition also goes to Dr. Kay B. Brown, Supervisor for Vocational Curriculum Development, for coordination of the final publication process.

The preparation and design of this resource and other original material are the products of the Virginia Vocational Curriculum Center, administered by the Henrico County Public Schools, Department of Vocational and Community Education:

Flora C. Armstrong, Project Director
Peggy Lum Watson, Writer/Editor

Dewey T. Oakley, Jr., Director
Division of Vocational Program Services
Virginia Department of Education

W. Tommy Johnson, Associate Director
Agricultural Education
Virginia Department of Education

CONTENTS

INTRODUCTION

CBE Standards and Requirements 1
Purpose 2
Organization 2
Terminology 4
How to Use the Service Area Resource and Task Analyses 7

SECTION I. OCCUPATIONAL INFORMATION

Introduction 11
Using DOT Descriptions for Occupational Information 11
Using Virginia View for Occupational Information 81

SECTION II. STUDENT ORGANIZATIONS

Introduction 85
Competency Development through FFA 86

SECTION III. CLASSROOM MANAGEMENT SYSTEMS

Introduction 89
Lesson Plans 91
  Lesson Plan Components 92
  Sample Lesson Plan 95
  Blank Lesson Plan Form 97
Student Task Sheets 99
  Sample Student Task Sheet 101
  Blank Student Task Sheet Form 103
Learning Contracts 105
Self-Contained Learning Systems 109

SECTION IV. RECORDING SYSTEMS

Introduction 113
Grading 113
Characteristics of Grading Systems for CBE 114
Psychomotor Grading 115
Grading System Including Affective, Cognitive, and
  Psychomotor Abilities 117
Characteristics of Recording Systems for CBE 117
Student Record Forms
  Type A, Sample 119
  Type A, Blank Form 123
  Type B, Sample 127
  Type B, Blank Form 133
Class Progress Charts
  Type A, Sample 139
  Type A, Blank Form 147
  Type B, Sample 151
  Type B, Blank Form 155

Bibliography 157

INTRODUCTION

This service area resource for Agricultural Education has been developed as part of a statewide effort to implement competency-based education (CBE) in state vocational programs. The development of this resource and the total implementation effort are based on the 1978-79 Virginia State Plan for Vocational Education which contains the following objectives:

> By June 30, 1982, each school division shall have implemented competency-based instruction in approved vocational education programs based on V-TECS and IDECC catalogues, if available, or other competency-based materials as reported in the annual Local Evaluation Programs, and each community college shall have implemented competency-based instruction in at least one program based on V-TECS materials as reported by the Virginia Community College System.

Although 1982 is designated in the above objective, the date has been extended and full implementation of competency-based education now is planned for 1984.

In addition to this state plan objective and previous efforts by state educators to implement CBE, the Virginia Department of Education has adopted the following CBE standards and requirements for vocational programs:

Standard I. ROLE-RELEVANT COMPETENCIES ARE IDENTIFIED AND STATED.

Requires:
A. A validated task/competency list for each vocational program
B. A performance objective for each validated task/competency.

Standard II. COMPETENCIES ARE SPECIFIED TO STUDENTS PRIOR TO INSTRUCTION

Requires: A system for providing task/competency information to students prior to instruction.

Standard III. CRITERION-REFERENCED MEASURES ARE USED TO MEASURE ACHIEVEMENT OF COMPETENCIES

Requires:

A. A criterion-referenced measure for each validated task/competency

B. A testing and evaluation procedure which tests the performance objective and is criterion-based.

Standard IV. A SYSTEM EXISTS FOR DOCUMENTING THE COMPETENCIES ACHIEVED BY EACH STUDENT.

Requires: A system that has task/competency records/profiles for student achievement in each vocational program, course, or unit.

The materials in this service area resource are designed to complement the task analyses for specific courses in order to comply with the state CBE standards and requirements for vocational and adult programs.

PURPOSE

The primary purpose of this resource is to assist the teacher and curriculum specialist in developing instructional materials which are competency-based and meet CBE standards and requirements for vocational and adult programs. It may be used to update vocational programs currently being offered. The materials contained in this resource are designed for planning by instructional personnel rather than for direct use by the students.

ORGANIZATION

This resource is divided into the following sections:

I. Occupational Information

Specific information concerning the occupational nature of the work and references to sources listing places of employment, training, qualifications, employment outlook, working conditions, and salary are provided in this section. The information is useful for preparing instructional activities and for counseling students.

II. Student Organizations

Information about the role of student organizations in vocational education and about the specific activities of the Future Farmers of America (FFA) is provided in Section II.

III. Classroom Management Systems

Several sample classroom management and delivery systems have been included in this section. The systems have been field-tested and are intended to assist the teacher in using competency-based materials in the classroom and laboratory/shop.

IV. Recording Systems

Recordkeeping systems have been developed to assist the teacher in documenting successful student achievement of competencies. This section contains sample classroom, permanent record, and recording systems.

A task analyses package is available for each course in Agricultural Education. Each package contains the following information:

Section 1. Task Inventory

This section contains a listing of validated task/competency statements for incumbent workers. Included are program and course titles, performance and enabling objectives, and criterion references related to the task. The task list is arranged by worker duty areas only. No attempt has been made to sequence the tasks in this section of the publication.

Section 2. Programs and Courses

This section contains a description, task sequence list, and outline for the specific course. Course information is preceded by a description of Agricultural Education programs and program options which incorporate the course.

When the task analyses package is used in conjunction with the relevant occupational information in Section I and the material in Sections II, III, and IV of the service area resource, a complete instructional resource guide for a specific course offering is available for implementing a competency-based Agricultural Education program.

TERMINOLOGY

ARTICULATION: A planned process within an educational system that coordinates instructional programs, enabling students to move from one instructional level to another or from one institution to another at the same instructional level without unnecessary duplication or gaps in the instructional program.

CHECKLIST: A list of activities or behaviors that are checked by a student, teacher, or observer as being completed during a particular observation session; frequently used to assess student performance in the psychomotor and affective domains of learning.

COMPETENCY: Demonstrated ability (including knowledge, skills, or attitudes) to perform a specific task successfully in order to meet a specified standard.

COMPETENCY-BASED EDUCATION (CBE): Educational programs in which required knowledge, skills, and attitudes are based on role-relevant competencies.

COMPETENCY-BASED EDUCATION STANDARDS: Standards for CBE in Virginia: (1) role-relevant competencies are identified and stated; (2) competencies are specified to students prior to instruction; (3) criterion-referenced measures are used to assess achievement of competencies; and (4) a system exists for documenting the competencies achieved by each student.

COMPETENCY RECORD/PROFILE: A document that provides specific information concerning student achievement of competencies in CBE courses or programs, including the following information: student name, program title, listing of all terminal competencies, enabling competencies (if required), rating scale, and method for authenticating the record.

CONTENT/CONCEPT: A distinct grouping of tasks which are related to each other by the nature of the activity performed.

CRITERION (criteria): The standard(s) required for a student to reach mastery of an objective.

CRITERION-REFERENCED MEASURE (CRM): A test, test item, or a statement which describes how a student will be tested and/or evaluated. The CRM is based on the task/competency standard or criterion, as illustrated in the following examples:

Psychomotor

Tune an adjusted carburetor in accordance with the manufacturer's specifications within 45 minutes.

Cognitive

Identify and label 15 out of 20 seed samples on a written test.

Affective

Exhibit positive attitudes in the vocational classroom and laboratory. Attitudes will be evaluated by the Program Attitude Checklist.

CRITERION-REFERENCED TESTING: A process of testing which yields measurements that are directly interpretable in terms of specified performance standards. An individual's performance is compared to a criterion, the criterion being the work of performance standard. Therefore, criterion-referenced testing is based on absolute standards stemming from the competency rather than relative standards such as class standing (also called criterion-referenced evaluation, objective-referenced testing, proficiency testing, or domain-referenced testing).

CURRICULUM: Objectives, content, and learning activities arranged in a learning sequence for a particular instructional area. An orderly arrangement of integrated topics, activities, and experiences which students pursue for the attainment of a specified educational goal.

DUTY AREA: A major segment of the work involved in an occupation; composed of a group of tasks which are related to each other by the nature of the work to be performed.

ENABLING OBJECTIVE: A sub-goal that identifies one thing a learner must be able to know or to do to complete the performance objective.

ENTRY-LEVEL SKILLS: The set of competencies required of a beginning worker in an occupation for immediate productivity upon entering that occupation.

JOB/OCCUPATION: The composite of duties and tasks performed regularly in one's trade, occupation, or profession.

INSTRUCTIONAL ACTIVITIES: Educational activities completed by the students to learn specific competencies (also called learning strategies).

INSTRUCTIONAL RESOURCE GUIDE: One or more documents including detailed information for developing competency-based courses and programs. The guide(s) include information concerning the occupational or program domain, task list, performance and enabling objectives, criterion-referenced measures, learning activities, tools/materials, references, program and course descriptions, course content outlines, classroom management systems, student recording systems, and additional resources.

OCCUPATIONAL DOMAIN: A group or listing of occupations within a vocational area that share common experiences, knowledge, and skill requirements, such as manufacturing occupations and construction occupations.

PERFORMANCE: A clear statement of what the learner will be able to do after mastery status has been achieved.

PERFORMANCE OBJECTIVE: A statement in precise measurable terms of a particular behavior to be exhibited by a learner under specified conditions. It possesses each of the elements or characteristics specified below:

a. Condition--The performance situation confronting the learner is clearly specified. This specification includes equipment provided or withheld and environmental constraints such as temperature and space.

b. Performance--The specific behavior expected of the learner is stated.

c. Standard (criterion)--The degree of acceptable performance is specified. This may be quantitative, qualitative, or both. If quantitative, 100 percent proficiency is assumed unless otherwise stated. In the standard, ". . . locate shorts in an ignition system," it is assumed that all shorts must be located, compared to, "locate three of four shorts existing in an ignition system." If qualitative, the standard is explicitly stated, e.g., ". . . measure the bearing to within .005 of that found by the instructor."

STANDARD: That part of a performance objective or criterion-referenced measure which describes how well or to what proficiency level a task must be performed (also called performance level, criterion, or work standard).

TASK: A unit of work activity or operation that constitutes a logical and necessary step in the performance of a duty. For example:

Job/Occupation	Duty	Task
Farm Equipment Mechanic	Maintaining and servicing ignition circuit	Replace distributor points and condenser

TASK ANALYSIS: An organized method for identifying roles, responsibilities, and jobs performed by workers in an occupation or for identifying content in non-occupational courses. Task analyses are used in CBE to establish instructional content and scope.

TASK LIST: A list of tasks performed by workers in an occupational domain (also called job inventory) or what is required to be taught in a nonoccupational course (industrial arts, general business, exploratory, etc.).

VALIDATION: A procedure used to determine and verify if tasks/competencies identified for a vocational program are valid.

HOW TO USE THE SERVICE AREA RESOURCE AND TASK ANALYSES

The content and format of this resource, when used in conjunction with separate task analyses, provide the occupational and related information needed to implement CBE programs in a systematic manner.

The following steps should be followed when using these materials to implement CBE in a vocational program or course:

Using the Resource

1. Review occupational information. Section I contains detailed information concerning the occupational domain, which may be used to give students a general overview of the career opportunities in the field of agricultural occupations. When setting up a specific program or course, study the guide application chart located on the inside front cover of the separate task analyses package to determine whether the guide includes the occupational titles and courses appropriate for the local setting. Extract the needed occupational information from Section I.

Using the Separate Task Analyses Package

2. Review tasks. Review the task inventory in Section 1 to determine whether all task/competencies are included for the region or locality in which the program or course is offered. If additional task/competencies are required for the program/course, include them in the instructional program.

3. Review outlines and sequenced competencies. In Section 2, review the task sequence listing and content outline referenced to the task inventory in Section 1. Revise the course outlines if additional task/competencies have been identified or if the sequencing needs to be changed.

4. Develop criterion-referenced measures. Construct criterion-referenced tests and assessment materials, using the criterion-referenced measures provided on the task inventory sheets in Section 1. Develop criterion-referenced measures and tests for all additional competencies identified.

5. Develop instructional materials. Develop or select instructional materials such as student handouts, learning packages, modules, or lab exercise sheets. Review instructional materials currently being used to determine compatibility with the competencies identified for the program/course. Resources for the suggested learning activities are included on the task inventory sheets in Section 1.

Using the Resource

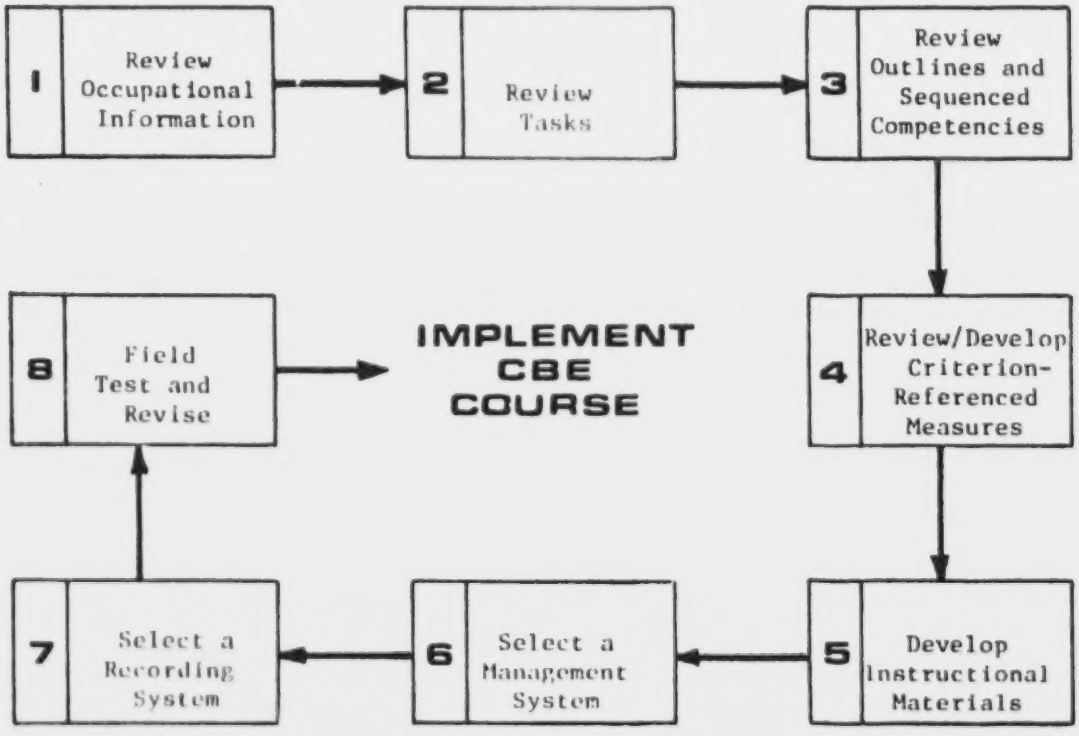
6. Select a management system. Select a classroom management or delivery system from Section III. Modification may be necessary to meet individual requirements. Information on the Future Farmers of America student organization is contained in Section II for ease of integration into classroom activities.

7. Select a recording system. Design or select a student recording system from Section IV. The decision to select a particular recording system will depend on program requirements and local administrative procedures. A variety of sample system designs has been included in this resource.

Field Testing

8. Field test and revise instructional materials. This is the final step prior to the implementation of CBE materials in a vocational program.

The use of the service area resource and the specific task analyses for implementing CBE in a vocational program or course is illustrated by the following diagram:



The preceding procedure may be modified to meet local program requirements and needs. It is important to realize that these materials represent only one resource and that additional materials may be necessary to meet the employment requirements of industry. Further information concerning the implementation of CBE is provided in Guide for Implementing Competency-Based Education in Vocational Programs, Virginia Department of Education.[1]

This service area resource will be revised periodically to provide updated information on programs, courses, and new technology, in order to assist Agricultural Education teachers and counselors in their efforts to aid students making career decisions.

---

[1]Ralph A. Horne, Guide for Implementing Competency-Based Education in Vocational Programs, Field Review Draft (Richmond: Virginia Department of Education, 1981).

SECTION I.

OCCUPATIONAL INFORMATION

This section, consisting of two parts, provides information for teachers and counselors to use when presenting career information to students. First, descriptions of the tasks performed by workers in selected nationally researched jobs in agricultural businesses and industries have been compiled from the Dictionary of Occupational Titles[2] (DOT). Second, user information is provided on the Virginia Vital Information Education Workshops Microfiche Deck, which concentrates its career information on those jobs most in demand in Virginia.

It may be helpful to duplicate the materials for students to use in making comparisons within a selected field of study. This material may be useful also in preparatory courses to aid in course selection and goal setting.

USING DOT DESCRIPTIONS FOR OCCUPATIONAL INFORMATION

The information obtained from the Dictionary of Occupational Titles identifies specific job titles, such as Fruit Farmworker I or Industrial-Commercial Groundskeeper. These job titles are arranged alphabetically with each title on a separate page. A contents page precedes these descriptive sheets for ease in locating specific occupational information.

Career information can be studied for comparisons of such factors as earnings, training needed, and occupational growth. Categories of occupational information, found in the Occupational Outlook Handbook[3] and similar resources, may be identified as follows:

---

[2]U.S. Department of Labor, Employment and Training Administration, Dictionary of Occupational Titles (4th ed.; Washington, D.C.: U.S. Government Printing Office, 1977).

[3]U.S. Department of Labor, Bureau of Labor Statistics, Occupational Outlook Handbook (1980-81 ed.; Washington, D.C.: U.S. Government Printing Office, 1980).

PLACES OF EMPLOYMENT: Includes the number of workers in a given occupation; a listing of the places with a description of numbers (most, many, some) of the places of employment; the areas of concentration, geographically or industrially; and the number of self-employed persons.

WORKING CONDITIONS: Lists the conditions common to different occupations, overtime work, environment, hazards, and outdoor/indoor occupations.

PREPARATION/TRAINING: Identifies the types of training required or preferred and where such training is available. (Note: Entry-level jobs are most often found in office and service clusters, but some are found in sales, mechanical, and industrial clusters. The level at which a person enters an occupation and the speed at which the person advances frequently are determined by the amount of training completed by the individual.)

OTHER QUALIFICATIONS: Includes physical requirements, personality traits, aptitudes, and attitudes.

ADVANCEMENT: Summarizes the possibilities that exist with and without additional training; career ladder progression; patterns of movement from one occupation to another, if available; occupations which require little or no previous work experience; opportunities to transfer to other work of a similar nature; and licensing or certification requirements. (Note: Occupational skills gained in one job can make the worker more employable in another--perhaps a job that is more desirable in terms of earnings, working conditions, or scope for self-expression.)

WORKER FUNCTIONS/RELATIONSHIPS: Refers to the middle three digits in the DOT code which rate the worker functions entailed in the particular job. (Note: The higher the number assigned, the less complex the function; conversely, the lower the number assigned, the more complex the level of responsibility and judgment required.)

SPECIALIZED TITLES: Refers to those that require similar aptitudes, interests, and education or training; for example, occupations related to landscape workers include greenskeeper, industrial-commercial groundskeeper, landscape gardener, landscape laborer, and lawn service worker.

RELATED OCCUPATIONS: Refers to those that require similar aptitudes, interests, and education or training; for example, occupations related to landscape workers include the specialized titles noted above.

NATURE OF THE WORK: Describes the major duties of workers in the occupation or industry; what the workers do on the job; what tools and equipment they use; and how they do their work. The DOT definition contains three parts: Lead Statement, Task Element Statements, and the May Items.

a. Lead Statement--Summarizes the entire occupation; the first sentence following the industry designation and alternate titles, if any.

b. Task Element Statements--Indicates the specific tasks the worker performs to accomplish the overall job purpose described in the lead statement.

c. May Items--Describes the duties required of workers in some establishments but not in others. (Note: The lead statements and the task element statements are included in this presentation.)

EMPLOYMENT OUTLOOK: Presents data as follows:

PROJECTED 1978-90 CHANGE IN EMPLOYMENT REQUIREMENTS

____ Much faster than average	50.0 percent or more
____ Faster than average	25.0 to 49.9 percent
____ About as fast as average	15.0 to 24.9 percent
____ More slowly than average	5.0 to 14.9 percent
____ Little change	4.9 to -4.9 percent
____ Decline	-5.0 percent or more

Openings due to: ____ Annual replacements
____ Growth of industry

EARNINGS: Includes items such as salary/wages, overtime, night shift, irregular hours, tips, and differences in earnings within given occupations. (Note: Generally, earnings are compared to the average earnings of workers in private industry who are not supervisors and not in farming. This group represented about 60 percent of all workers in 1978. Salaries may vary according to geographic location, type of industry, and type of work performed.)

BENEFITS: Contains an overall listing of benefits available; however, advantages not listed also may be available.

Occupational information is presented on the following pages in relation to the categories described. For further information, write to the following:

Executive Director of VOICC
(Virginia Occupational Information Coordinating Committee)
Virginia Employment Commission
P. O. Box 1358
Richmond, Virginia 23211

Dictionary of Occupational Titles Descriptions — Page

All-Round Logger 17
Cash Grain Farmer 18
Christmas Tree Farm Manager 19
Diversified Crops Farmer 20
Diversified Crops Farmworker I 21
Farm and Garden and Supplies Sales Representative 22
Farm Equipment Mechanic I 23
Farm Equipment Mechanic II 24
Farm General Manager 25
Farm Machine Operator 27
Feed Mixer 29
Fertilizer Mixer 30
Field Crop Farmer 31
Field Crop Farm Worker I 33
Field Crop Harvest Worker 34
Fish Hatchery Worker 35
Floral Designer 37
Flowers Salesperson 38
Forest Worker 39
Forester Aide 41
Fruit Farmworker I 43
General Farmer 44
General Farmworker II 45
Grain Farmworker I 46
Greenskeeper II 47
Horticultural and Nursery Products Salesperson 48
Horticultural-Specialty Farming Supervisor 49
Horticultural Worker I 51
Horticultural Worker II 53
Industrial-Commercial Groundskeeper 55
Inside Horticultural-Specialty Grower 56
Landscape Gardner 57
Landscape Laborer 59
Lawn-Service Worker 60
Machine Farmworker 61
Nursery Manager 63
Parks and Grounds Groundskeeper 64
Parts Salesperson 65
Plant Propagator 67
Small Engine Mechanic 69
Soil Conservationist 70
Surveyor Helper 71
Tractor Mechanic 72
Tree-Fruit-and-Nut Crops Farmer 73
Tree Planter 75
Vegetable Farmer 76
Vegetable Farmworker I 77
Vegetable Harvest Worker 78
Vine-Fruit Crops Farmer 79

ALL-ROUND LOGGER

DOT 454 684 018

HARVESTS PERFORMING timber trees, a combination of the following tasks:

FELLS trees in specified direction,
REMOVES limbs and top, and
MEASURES
AND
CUTS tree into log lengths,
USIN chainsaw, wedges, and ax.

[redacted] logs onto trucks by hand or
[redacted] winch.

CASH GRAIN FARMER

DOT 401 **161** 010

PLANTS CULTIVATES AND HARVESTS one or more grain crops, such as barley, corn, rice, soybeans, and wheat, for cash sale:

SELECTS AND BUYS TAKING type and amount of seed to be grown, into consideration local growing conditions and market demands.

OPERATES PLOW DISC HARROW AND FERTILIZE PLANT equipment to ground and to grain.

PLANS CONSIDERING harvesting, ripeness and maturity of grain and weather conditions and **OPERATES** grain-harvesting equipment.

SELLS STORES grain or grain for future sale.

DIRECTS activities of workers.

HIRES AND DISCHARGES workers.

CHRISTMAS TREE FARM MANAGER

DOT 180 117 010

PLANS
DIRECTS
AND
COORDINATES **district operations of Christmas tree farm:**

PLANS activities of district according to executive directives, budget, projected sales volume, and other guidelines.

NEGOTIATES contracts for lease of private lands for farming, and purchase of wild (uncultivated) trees for harvesting.

ISSUES instructions to supervisors pertaining to variety and density of tree planting, cultural practices to apply, harvesting dates and locations, and shipping schedules.

CONTRACTS for trucks to haul trees from cutting areas to sorting yard.

HIRES
COORDINATES workers and planting and cultivating of seedlings, and pruning, harvesting, grading, and shipping of trees.

DIRECTS office activities, such as completion of production reports, preparation of payroll, and maintenance of office records.

DIVERSIFIED CROPS FARMER

DOT 407 161 010

GROWS AND HARVESTS more than one kind of crop, such as fruit, grain, vegetable, and specialty crops.

APPLYING market condition and agricultural knowledge applicable to kinds of crops raised:

- DETERMINES / GROW kinds and quantities of crops to according to market conditions, weather, and farm size and location.
- SELECTS AND PURCHASES supplies, such as seeds, fertilizers, and farm machinery, and
- ARRANGES with buyers for sale of crops.
- HIRES AND DIRECTS activities of farm workers engaged in soil and TILLING PLANTING CULTIVATING AND HARVESTING crops.
- PERFORMS various duties of farm workers, depending on farm size or season, including
- SETTING UP AND OPERATING farm machinery, such as truck, tractor, disc harrow, and self-propelled harvester.

DIVERSIFIED CROPS FARMWORKER I

DOT 407 663 010

DRIVES AND OPERATES farm machines to GROW AND HARVEST combination of kinds of crops, such as grain, fruit, and vegetable:

ATTACHES farm implements, such as plow, seed drill, and manure spreader to tractor, and
DRIVES tractor and
OPERATES implements in fields to
TILL soil and
PLANT
CULTIVATE
AND
FERTILIZE crops, such as sugar beets, asparagus, wheat, onions, and mint.

THINS
AND
WEEDS plants, such as field corn, lima beans, fresh peas, and dry beans,
USING hand tools, such as hoes and shovels, or power-drawn implement.

IRRIGATES fields to
PROVIDE moisture for crop growth, according to irrigation method appropriate for crops or locality.

FARM AND GARDEN AND SUPPLIES SALES REPRESENTATIVE

DOT 272 357 014

SELLS farm and garden machinery, equipment, and supplies, such as tractors, feed, fertilizer, seed, insecticide, and farm and garden implements,

PERFORMING duties as described under Sales Representative.

FARM-EQUIPMENT MECHANIC I

DOT 624 281 010

MAINTAINS REPAIRS AND OVERHAULS farm machinery, equipment, and vehicles, such as tractors, harvesters, pumps, tilling equipment, trucks, and other mechanized, electrically powered, or motor-driven equipment, on farms or in farm-equipment repair shops:

EXAMINES AND LISTENS TO machines, motors, gasoline and diesel engines, and equipment for operational defects, and

DISMANTLES defective units,

USING hand tools.

REPAIRS OR REPLACES defective parts,

USING hand tools and machine tools, such as drill press, lathe, milling machine, woodworking machines, welding equipment, grinders, and saws.

REASSEMBLES ADJUSTS AND LUBRICATES machines and equipment to

ENSURE efficient operation.

FARM-EQUIPMENT MECHANIC II

DOT 624 381 014

[redacted] minor repairs on farm vehicles, machinery, and equipment, such as tractors, trucks, automobiles, harvesters, combines, silo fillers, plows, and similar equipment,

USING hand tools:

[redacted] machinery and parts in operation to malfunctioning or defective units.

REPLACES components, such as carburetors, fuel pumps, generators, ignition points, and spark plugs.

ADJUSTS timing of motors,

LUBRICATES

WASHES

PAINTS

AND

CLEANS vehicles and attachments,

USING hand tools.

FARM GENERAL MANAGER

DOT 180 167 018

MANAGES / RAISING / HARVESTING / PACKING / AND / MARKETING farm concerned with farm products for corporations, cooperatives, and other owners:

- ANALYZES / DETERMINE market conditions to acreage allocations.
- NEGOTIATES / OBTAIN with officials to credit from bank.
- PURCHASES farm machinery, equipment, and supplies, such as tractors, seed fertilizer, and chemicals.
- HIRES / AND / DISCHARGES personnel.
- PREPARES financial and other management reports.
- SUPERVISES / PREPARING / KEEPING office personnel engaged in payrolls and records.
- VISITS / INSPECT / AND / ESTIMATE orchards and fields to maturity dates of crops.
- CONFERS / DETERMINES / SELL with purchasers, and when and under what conditions to crops, marine life, or forest products.

FARM-MACHINE OPERATOR

DOT 409 683 010

DRIVES AND OPERATES one or more farm machines, such as tractors, trucks, and harvesters to

[illegible] specified farm activities such as
CUTTING hay,
PICKING cranberries, and
HARVESTING wheat:

HITCHES soil conditioning implement, such as plow or harrow, to tractor and
OPERATES tractor and towed implement to
FURROW
AND
GRADE soil.

DRIVES tractor and
OPERATES designated towed machine, such as seed driller or manure spreader to
PLANT
FERTILIZE
DUST
AND
SPRAY crops.

PREPARES harvesting machine by
ADJUSTING speeds of cutters, blowers, and conveyors and height of cutting head or depth of digging blades according to type, height, weight, and condition of crop being harvested and contour of terrain.

ATTACHES towed- or mounted-type harvesting machine to tractor,
[illegible] hand tools, or
[illegible] self-propelled harvesting machine to
[illegible]
BUNDLE crops, such as sod, vine fruits, or livestock feed.

(continued)

MOVES
PULLS
TURNS
ACTIVATE
AND
REGULATE

switches, levers, and knobs and wheels to mechanisms.

REFUELS
LUBRICATES
MONITORS
ENSURE

engine, machine parts, and machine operations to optimum performance.

[illegible]VES
HAUL

truck to materials, supplies, or harvested crops to designated locations.

FEED MIXER

DOT 520 685 098

TENDS MIX CONVEYS machines that stock or poultry feed according to formula and it to packing machine or storage:

DUMPS specified number of sacks of meal, mash, grain, and meat scrap into machine hopper, or separate bins to batch scale hopper until specified weight of each ingredient is obtained.

WEIGHS PUMPS additives, such as minerals and vitamins, and them into hopper.

STARTS MIX STARTS TRANSFER machine to ingredients, and elevators and conveyors to feed to storage tanks or packing machine hoppers.

FERTILIZER MIXER

DOT 550 665 018

TENDS machine that
MIXES nitrogen, phosphate, and potash to
PRODUCE fertilizer:

PULLS lever to
FEED dry materials from storage hopper into mixer.

OBSERVES gauges and
TURNS valves to
ADMIT specified amounts of liquids, such as ammonia and sulphuric acid, into mixer.

STOPS mixer after specified time and
TURNS handwheels
OR
PULLS lever to
DUMP batch onto conveyor.

[redacted]

DOT 404 **161** 010

[redacted]

specialty crops, such as alfalfa, cotton, hops, peanuts, mint, sugarcane, and tobacco,

[redacted]

knowledge of growth characteristics of individual crop and soil, climate, and market conditions:

[redacted] number and kind of employees to be hired, acreage to be tilled, and varieties and quantities of plants to be grown.

[redacted] plant stock and farm machinery, implements, and supplies.

[redacted] when and how to

[redacted] plants and crops, knowledge of plant culture.

[redacted] farm implements, such as plow, disc, and seed drill, to tractor and tractor in fields to soil and

[redacted] crops.

[redacted] farm machinery to fertilizers, herbicides, and pesticides and harvested crops.

(continued)

FIELD CROP FARMER

HIRES
ASSIGNS
OVERSEE
duties to, and
activities of farm workers.

DEMONSTRATES
AND
EXPLAINS
farm work techniques and safety regulations to new workers.

MAINTAINS employee and financial records.

ARRANGES with buyers for sale and shipment of crops.

FIELD CROP FARM WORKER I

DOT 404 663 010

PERFORMS PREPARE PLANT CULTIVATE AND HARVEST following duties to fields and field crops, such as cotton and hops:

ATTACHES implements, such as disc harrow and weed cutter, to tractor, USING bolts and mechanic's hand tools.

DRIVES TOWS tractor to field and attached implement back and forth across field or between crop rows, MANIPULATING ACTIVATE AND POSITION levers that implement parts to TILL soil.

LOADS AND DRIVES TRANSPORT truck to farm supplies and tools, such as fertilizer and pesticide chemicals, trellis poles and wires, hoes and shovels, harvested crops, and farm workers to specified locations.

DRIVES AND OPERATES HARVEST self-propelled harvest machine to crop.

ADDS oil, gasoline, and water to appropriate tanks on machinery.

MAKES REPAIRS PAINTS REPLACES minor mechanical adjustments and on farm machinery, farm structures, and fence and trellis wires when weather precludes activities.

FIELD CROP HARVEST WORKER

DOT 404 687 014

HARVESTS field crops, such as broomcorn, cotton, hops, peanuts, sugarcane, and tobacco,
[illegible] as crewmember:

WALKS
STOOPS
CRAWLS
OR
SITS
REACH
between plant rows to harvestable crop.

PULLS
TWISTS
OR
CUTS
SELECTED
according to color, size, and shape, from bolls, roots, stalks, or trellises; by hand or
USING
knife, machete, or sickle.

COLLEC
crop into containers, such as bags, boxes, and bundles, or
[illegible]
AND
STACKS
crop in windrows.

[illegible]
AND
CARRIES
bundles, bales, containers, or stacks of harvested crop to collection point, and
LOADS
USING
crop onto truck or wagon, by hand or hoist or hooks.

[redacted]

DOT 446 684 010

[redacted] any combination of following tasks to
TRAP
AND
[redacted]
[redacted] game fish,
[redacted] eggs, and
[redacted] fry in fish hatchery:

[redacted] net on both banks of river to
[redacted] fish to holding pond.

[redacted] ripened fish from holding pond with hand net and
[redacted]
[redacted]
[redacted] bellies of female fish to
[redacted] eggs in pail.

[redacted] bellies of male fish to
[redacted] milt over eggs, and
[redacted] with rubber-gloved hand to
[redacted] eggs.

[redacted] hatchery trays with fertilized eggs and
[redacted] trays in incubation troughs.

[redacted] valves and
[redacted] baffles in troughs to
[redacted] volume, depth, velocity, and temperature of water.

[redacted] eggs and
[redacted] dead, infertile, and off-color eggs,
[redacted] suction syringe.

[redacted] fish according to size, coloring, and species and
[redacted] fingerlings to rearing ponds or tanks,
[redacted] buckets or tank truck.

[redacted] food over surface of water by hand or
[redacted] blower that automatically
[redacted] food over water to
[redacted] fish.

[redacted] appearance and actions of developing fish to

(continued)

DETECT / ADDS diseases and medications to food and water as instructed by superior.

TRANSFERS / USING mature fish to rivers and lakes, tank truck.

RECORDS / PREPARES field data and reports of hatchery activities.

DRAINS / AND / CLEANS / USING ponds and troughs, brushes, chemicals, and water.

MAKES / PAINTS / MAINTAINS minor repairs to hatchery equipment, buildings, and grounds.

FLORAL DESIGNER

DOT 142 **081** 010

DESIGNS AND FASHIONS **live, cut, dried, and artificial floral and foliar arrangements for events, such as holidays, anniversaries, weddings, balls, and funerals:**

CONFERS with client regarding price and type of arrangement desired.

PLANS arrangement according to client's requirements and costs,

USING knowledge of design and properties of materials, or

SELECTS appropriate standard design pattern.

SELECTS flora and foliage necessary for the arrangement.

TRIMS AND ARRANGES material

bouquets, sprays, wreaths, dish gardens, terrariums, and other items,

USING wire, pins, floral tape, foam, trimmers, cutters, shapers, and other materials and tools.

FLOWERS SALESPERSON

DOT 260 357 026

SELLS natural and artificial flowers, potted plants, floral pieces, and accessories:

ADVISES customer regarding type of flowers, floral arrangements, and decorations desirable for specific occasions,

USING knowledge of social and religious customs.

ARRANGES display of flowers and decorative accessories, such as vases and ceramics.

PERFORMS other duties as described under Salesperson.

FOREST WORKER

DOT 452 **687** 010

PERFORMS REFOREST AND PROTECT MAINTAIN variety of tasks to timber tracts and forest facilities, such as roads and campsites:

PLANTS USING tree seedlings in specified pattern, mattock, planting hoe, or dibble.

CUTS OUT AND PRUNES DETER USING diseased, weak, or undesirable trees limbs of young trees to knot growth, handsaw, powersaw, and pruning tools.

FELLS CLEARS EXTINGUISHES SUPPRESS USING trees, brush from fire breaks, and flames and embers to forest fires, chainsaw, shovel, and engine-driven or hand pumps.

CLEARS AND PILES USING brush, limbs, and other debris from roadsides, fire trails, and camping areas, ax, mattock, or brush hook.

SPRAYS OR INJECTS USING trees, brush, and weeds with herbicides, hand or powered sprayers or tree injector tool.

ERECTS USING signs and fences, posthole digger, shovel, tamper, or other hand tools.

REPLENISHES CLEANS firewood and other supplies, and kitchens, restrooms, and campsites or recreational facilities.

(continued)

FOREST WORKER

HOLDS measuring tape or survey rod,
CARRIES
AND
SETS stakes,
CLEARS brush from sighting line, and
PERFORMS related tasks to
ASSIST forest survey crew.

FORESTER AIDE

DOT 452 364 010

COMPILES data pertaining to size, content, condition, and other characteristics of forest tracks, under direction of Forester; and

LEADS workers in forest propagation, fire prevention and suppression, and facilities maintenance:

TRAVERSES forest in designated pattern to
GATHER basic forest data, such as topographical features, species, and population of trees, wood units available for harvest, disease and insect damage, tree seeding mortality, and conditions constituting fire danger.

MARKS trees of specified specie, condition, and size for thinning or logging.

COLLECTS AND RECORDS data from instruments, such as rain gauge, thermometer, stream-flow recorder, and soil moisture gauge.

HOLDS stadia rod,
CLEARS survey line,
MEASURES distances,
RECORDS survey data, and
PERFORMS related duties to
ASSIST in
SURVEYING property lines, timber sale boundaries, and road and recreation sites.

TRAINS AND LEADS conservation workers in seasonal activities, such as
PLANTING tree seedlings,
COLLECTING seed-cones,
SUPPRESSING fires,
CLEANING AND MAINTAINING recreational facilities, and
CLEARING fire breaks and access roads.

(continued)

FORESTER AIDE

GIVES instructions to visitors of forest, and

ENFORCES camping, vehicle use, fire-buildings sanitation, and other forest regulations.

FRUIT FARMWORKER I

DOT 403 **683** 010

DRIVES
AND
OPERATES
CULTIVATE
SPRAY
AND
HARVEST

farm machinery to

fruit and nut crops, such as apples, oranges, strawberries, and pecans:

ATTACHES
DRIVES
REPAIRS
PLANT
FERTILIZE
AND
HARVEST

farm implements, such as plow, planter, fertilizer applicator, and harvester, to tractor and tractor in fields to soil and crops.

MIXES
SPRAYS
DUSTS

chemical ingredients and trees, vines, and grounds with solutions to insects, fungus and weed growth, and diseases.

REMOVES
IMPROVES
USING

excess growth from trees and vines to fruit quality, pruning saws and clippers.

IRRIGATES
USING

soil, portable-pipe or ditch system.

PICKS

fruit during harvest.

DRIVES
TRANSPORT

truck or tractor to materials, supplies, workers, and products.

MAKES

adjustments and minor repairs to farm machinery.

GENERAL FARMER

DOT 421 161 010

RAISES both crops and livestock:

DETERMINES kinds and amounts of crops to be grown and livestock to be bred, according to market conditions, weather, and size and location of farm.

SELECTS AND PURCHASES seed, fertilizer, farm machinery, livestock, and feed, and

ASSUMES responsibility for sale of crop and livestock products.

HIRES AND DIRECTS workers engaged in

PLANTING CULTIVATING AND HARVESTING crops, such as corn, peas, potatoes, strawberries, apples, peanuts, and tobacco, and to

RAISE livestock, such as cattle, sheep, swine, horses, and poultry.

PERFORMS various duties of farm workers, depending on size and nature of farm, including

SETTING UP AND OPERATING farm machinery.

GENERAL FARMWORKER II

DOT 421 687 010

PERFORMS variety of manual, animal-and-crop-raising tasks on general farm under close supervision:

FEEDS AND WATERS cattle, poultry, and pets.

CLEANS barns, stables, pens, and kennels, USING rake, shovel, water, and other cleaning materials.

DIGS seedlings, such as tobacco plants, strawberries, tomatoes, and orchard trees, USING hoe, and TRANSPLANTS them by hand.

SHOVELS earth to CLEAR irrigation ditches and OPENS sluice gates to IRRIGATE crops.

CLEANS plows, combines, and tractors, USING scraper and broom.

PICKS CUTS OR PULLS fruits and vegetables to HARVEST crop.

STACKS loose hay, USING pitchfork, or PITCHES hay into automatic baling machine.

STACKS bales of hay and BUCKS them onto wagon or truck, USING handhook.

GRAIN FARMWORKER

DOT 401 683 010

DRIVES
[illegible]
OPERATES
PLANT
CULTIVATE
[illegible]
AND
[illegible]

farm machinery to

grain crops, such as wheat, oats, rye, and corn:

ATTACHES farm implements, such as plow, disc, and drill, to tractor and
DRIVES tractor in fields to
TILL soil and
PLANT
AND
CULTIVATE grain, according to instructions.

[illegible] harvesting equipment or
DRIVES
AND
OPERATES self-propelled combine to
HARVEST crop.

PERFORMS variety of other duties, such as
HUSKING
AND
SHELLING corn,
LUBRICATING
AND
REPAIRING farm machinery, and
UNLOADING grain onto conveyors to storage bins or elevators.

GREENSKEEPER I

DOT 406 683 010

PERFORMS DIRECTED MAINTAIN **any combination of the following duties, as by Greenskeeper I, to grounds and turf of golf course in playing condition:**

OPERATES tractor,
USING specific attachments, to
TILL
CULTIVATE
AND
GRADE new turf areas, to
APPLY prescribed amounts of lime, fertilizer, insecticide, and fungicide, and to
MOW rough and fairway areas at designated cut,
EXERCISING care not to
INJURE turf or shrubs.

CUTS turf on green and tee areas,
USING hand mower and power mower.

CONNECTS hose and sprinkler systems at designated points on course to
IRRIGATE turf.

DIGS
AND
RAKES ground to
PREPARE new greens,
GRADES
AND
CLEANS traps, and
REPAIRS roadbeds,
USING shovels, spades, and other tools.

HORTICULTURAL AND NURSERY PRODUCTS SALESPERSON

DOT 272 357 022

SELLS container-grown plants and garden supplies in nursery, greenhouse, or department store:

ADVISES customer on selection of plants and methods of planting and cultivation.

SUGGESTS trees and shrubbery suitable for specified growing conditions.

PERFORMS other duties as described under Salesperson.

HORTICULTURAL-SPECIALTY FARMING SUPERVISOR

DOT 405 131 010

SUPERVISES AND COORDINATES activities of workers engaged in PROPAGATING CULTIVATING AND HARVESTING horticultural specialties, such as trees, shrubs, flowering plants, flowers, and mushrooms,

APPLYING knowledge of environmental-control structures, systems and techniques, and plant culture:

DISCUSSES plant growing activities with management personnel to

PLAN planting and picking schedules and employee assignments;

OBTAIN authorization for changes in fertilizer, herbicide, and pesticide application techniques and formulas;

RESOLVE problems; and

DEVELOP procedures for new species in product line and new cultivation techniques.

OBSERVES plants and flowers in greenhouses, pots, cold frames, and fields to

ASCERTAIN condition, such as leaf texture and bloom size; and

OVERSEES changes in humidity and temperature levels and cultivation procedures to

ENSURE conformance with quality-control standards.

PREPARES AND ASSIGNS work schedules.

TRAINS new employees in gardening techniques, such as

TRANSPLANTING AND WEEDING GRADING AND PACKAGING activities.

(continued)

INSPECTS facilities for signs of disrepair, such as missing glass panes and clogged sprinklers, and

DELEGATES repair duties to

ENSURE refurbishing or replacement of parts in environmental-control structures and systems.

HORTICULTURAL WORKER I

DOT 405 **684** 014

PLANTS
CULTIVATES
AND
HARVESTS
PERFORMS
APPLYING

horticultural specialties, such as flowers and shrubs, and related duties in environmentally-controlled structure knowledge of environmental systems:

ASCERTAINS growing schedules and deviations from established procedures from grower or manager.

SOW seed and plant cuttings.

LOOKS AT
AND
FEELS leaf texture, bloom development, and soil condition to

DETERMINE nutrient and moisture requirements and to
DETECT
AND
IDENTIFY germ and pest infestations.

SETS fertilizer timing and metering devices that control frequency and amount of nutrients to be introduced into irrigation system.

APPLIES herbicides, fungicides, and pesticides to
DESTROY undesirable growth and pests,
USING spray wand connected to solution tank.

READS
AND
INTERPRETS sensing indicators and
REGULATES humidity, ventilation, and carbon dioxide systems to
CONTROL environmental conditions.

GRAFTS scions to seedling stock.

(continued)

POLLINATES
PRUNES
TRANSPLANTS
AND
PINCHES plants, and
CULLS flowers, branches, fruit, and plants to
ENSURE development of marketable products.

HARVESTS
PACKS
AND
STORES crop,
USING techniques appropriate for individual horticultural specialty.

HORTICULTURAL WORKER II

DOT 405 **687** 014

PERFORMS
PREPARING
CULTIVATING
PARTICIPATING
any combination of following duties concerned with soil and growth media, and otherwise in horticultural activities under close supervision on acreage, in nursery, or in environmentally-controlled structure, such as greenhouse or shed:

HAULS
AND
SPREADS
CONDITION
topsoil, fertilizer, peat moss, and other material to land.

DIGS
RAKES
AND
SCREENS
FILLS
PREPARE
soil and cold frames and hot beds to them for planting.

FILLS
growing tanks with water.

PLANTS
SPRAYS
WEEDS
AND
WATERS
plants, shrubs, and trees.

SOWS
PLANTS
CUTS
ROLLS
AND
STACKS
grass seed and plugs of sod and sod.

PREPARES
AND
TIES
ASSIST
scions buds to worker budding roses.

TRAPS
AND
POISONS
pests, such as moles, gophers, and mice.

(continued)

PLANTS shrubs and plants in containers.

TIES
BUNCHES
WRAPS
AND
PACK
[illegible]L flowers, plants, shrubs, and trees to orders.

MOVES
USING containerized shrubs and trees, wheelbarrow.

DIGS UP
WRAPS shrubs and trees and their roots with burlap.

MAINTAINS grounds of industrial, commercial or public property, performing combination of following tasks:

CUTS lawns,
USING hand mower or power mower.

TRIMS AND EDGES around walks, flower beds, and walls,
USING clippers and edging tools.

PRUNES SHAPE AND IMPROVE shrubs and trees to growth,
USING shears.

SPRAYS lawn, shrubs, and trees with fertilizer or insecticide.

RAKES AND BURNS CLEANS OR SWEEPS UP leaves and litter,
USING spiked stick or broom.

SHOVELS snow from walks and driveways.

SPREADS salt on public passage ways.

PLANTS grass, flowers, trees, and shrubs.

WATERS lawn and shrubs during dry periods,
USING hose or by activating fixed or portable sprinkler system.

REPAIRS fences, gates, walls, and walks,
USING carpentry and masonry tools.

CLEANS OUT drainage ditches and culverts,
USING shovel and rake.

PAINTS fences and outbuildings.

INSIDE HORTICULTURAL-SPECIALTY GROWER

DOT 405 161 018

GROWS horticultural-specialty products and crops, such as flowers, ornamental plants, and vegetables, under environmentally controlled conditions,

APPLYING knowledge of plant culture, environmental-control systems and structures, and market conditions:

DETERMINES types and quantities of plantings to grow;
ALLOCATES space in structure, such as greenhouse or shed; and
SCHEDULES growing activities.

PLANTS seeds and
TRANSPLANTS seedlings in material, such as bark, gravel, heated water, sandy soil, and stable straw, to
PROPAGATE seeds and nursery stock.

REMOVES substandard plants to
MAINTAIN quality control.

PRUNES plants to
ENHANCE development, and
POSITIONS plants to
DISPLAY products artistically

MONITORS timing and metering devices that
CONTROL frequency, amount, and type of nutrient applications;
REGULATE humidity, ventilation, and carbon dioxide and
DISPENSE herbicides, fungicides, and pesticides.

EXPLAINS AND DEMONSTRATES care-taking techniques to subordinates.

LANDSCAPE GARDENER

DOT 408 **161** 010

PLANS AND EXECUTES AND MAINTAINS **small scale landscaping operations**

grounds and landscape of private and business residences:

PARTICIPATES with Landscape Laborer in PREPARING AND GRADING terrain, APPLYING fertilizers, SEEDING AND SODDING lawns, and TRANSPLANTING shrubs and plants, USING manual and power-operated equipment.

PLANS AND PLANS AND CULTIVATES lawns, USING gardening implements and power-operated equipment.

PLANTS AND REPAIRS new established lawns, USING seed mixtures and fertilizers recommended for particular soil type and lawn location.

LOCATES AND PLANTS shrubs, trees, and flowers selected or recommended by property owner for particular landscape effect.

TRIMS AND CULTIVATES shrubs gardens.

(continued)

LANDSCAPE GARDENER

CLEANS grounds,
USING rakes, brooms, and hoe.

SPRAYS trees and shrubs,
AND
APPLIES supplemental liquid and dry nutrients to lawn and trees.

LANDSCAPE LABORER

DOT 408 687 014

MOVES
DIGS
PERFORMS
ASSIST
LANDSCAPING
soil, equipment and materials, holes, and related duties to landscape gardener in grounds:

DIGS
PLANTS
AND
WATERS
holes and trenches with pick and shovel.
sod and shrubbery.

MIXES
AND
POURS
MOWS
cement for garden borders and lawns.

PLACES
PLANTS
stone and flowers in garden areas.

HAULS
SPREADS
AND
LEVELS
USING
topsoil in wheelbarrow and soil, rake.

LAWN-SERVICE WORKER

DOT 408 684 010

CULTIVATES lawns,
USING power aerator and thatcher and chemicals:

LIFTS dead leaves and grass from between growing grass and soil,
USING thatcher.

PIERCES soil to make holes for fertilizer and water,
USING aerator.

PRESSES aerator fork into soil and
PULLS rake through grass to
CULTIVATE areas not accessible to machines.

DISTRIBUTES granulated fertilizers, pesticides, and fungicides on lawn,
USING spreader.

RECORDS services rendered, materials used, and charges assessed on specified form.

TRANSPORTS thatcher, aerator, tools, and materials to and from job site,
USING truck with hydraulic lift-gate.

MACHINE FARMWORKER

DOT 409 **686** 010

PERFORMS any combination of following duties to FEED OR OFFBEAR farm machines used to PLANT HARVEST AND CLEAN crops:

LOADS containers of rooted cuttings, plants, seedlings, or bulbs on planting machine and PULLS levers to START PLANTING AND WATERING mechanisms.

WALKS beside or RIDES on machine while INSERTING plants in planter-mechanism clamp, pocket, or tube at specified intervals.

DUMPS PITCHES SCOOPS OR SHOVELS materials and products, such as bulbs, onions, and nuts into feed hopper.

PICKS UP spilled products and PLACES them on feed mechanism.

NOTIFIES designated coworker when machine malfunctions are observed.

STACKS empty boxes in conveyor discharge rack or HANGS bags on hooks under discharge chute, and FLIPS baffle lever that CHANNELS discharge to CATCH products.

CLOSES ends of filled sacks, USING tie wires.

(continued)

LOADS / GUIDES sacks or boxes onto truck or trailer, or discharge spout over truck, trailer, or silo.

CLEANS / PLANTING / OR / DIGGING machinery, such as mechanism and chain conveyor.

LUBRICATES / ADJUSTS / AND / REPLACES / USING machinery parts, hand tools.

[redacted]

DOT 180 167 042

MANAGES nursery to GROW horticultural plants, such as trees, shrubs, ornamental plants, or vegetables for sale to trade or retail customers:

DETERMINES type and quantity of horticultural plants to be grown,

CONSIDERING such factors as whether plants will be grown under controlled conditions in hothouse or greenhouse or under natural weather conditions in field, and market demand or conditions,

UTILIZING knowledge of plant germination, growing habits of plants, soil conditions, plant nutrients, and disease control requirements.

SELECTS AND PURCHASES seed, plant nutrients, and disease control chemicals according to type of horticultural plants and conditions under which plants will be grown.

DIRECTS AND [redacted] through subordinate supervisory personnel, activities of workers engaged in PLANTING, RAISING, FEEDING, AND [redacted] growth and disease of plants, and TRANSPLANTING, POTTING, OR CUTTING plants for marketing.

COORDINATES clerical, record keeping, accounting, and marketing activities.

PARKS AND GROUNDS GROUNDSKEEPER

DOT 406 **687** 010

KEEPS grounds of city, state, or national park and playgrounds clean and
REPAIRS buildings and equipment:

MOWS lawn,
USING hand mower or power-driven lawn mower.

GRUBS AND WEEDS around bushes, trees, and flower beds, and TRIMS hedges.

PICKS UP BURNS OR CARTS AWAY paper and rubbish.

REPAIRS AND PAINTS benches, tables, guardrails, and ASSISTS in REPAIR of roads, walks, buildings, and mechanical equipment,
USING hand tools.

CLEANS comfort stations and other buildings.

PARTS SALESPERSON

DOT 279 357 062

SELLS spare and replaceable parts and equipment from behind counter in agency, repair shop, or parts store:

ASCERTAINS, INSPECTS, DETERMINE, ADVISES make, year, and type of part needed, damaged part to part required, or customer of part needed according to description of malfunction.

DISCUSSES use and features of various parts, based on knowledge of engines, machinery, or equipment.

READS catalog for stock number, price, and replacement parts.

ADVISES customer on substitution or modification of parts when replacement is not available.

EXAMINES, DETERMINE, EXCHANGES, REFUNDS returned part to if it is defective and part or money.

FILLS, FINDING custom orders from stock, parts by location and stock number from catalog.

MARKS AND STORES parts in stockroom according to pre-arranged plan.

RECEIVES AND FILLS telephone orders for parts.

PERFORMS other duties as described under Salesperson.

PLANT PROPAGATOR

DOT 405 **361** 010

PROPAGATES, APPLYING plants, such as orchids and rhododendrons, knowledge of environmental controls and plant culture:

CONFERS, ASCERTAIN with management personnel to type and number of species to propagate and to

DEVELOP, REVISE and nutrient formulas and environmental-control specifications.

SELECTS materials according to kind of plant;
MIXES growth media; and
PREPARES containers, such as jars, pots, and trays.

INITIATES new plant growth
USING methods, such as the following:

(1) CUTS leaves, stems, or rhizomes from parent plant and
PLACES cuttings in growth media.

(2) BENDS, COVERS, OR BURIES branches of parent plant in soil,
SECURING branches with pegs or rocks.

(3) WOUNDS stems of parent plant,
USING sharp knife,
INSERTS pebble into wound, and
BINDS wound with moss, burlap, or raffia.

(4) PLANTS meristem and seeds in growth media.

(5) BREAKS OFF, OR CUTS APART AND PLANTS roots, crowns, and tubers from parent plant.

(continued)

PLANT PROPAGATOR

INSPECTS growing area to
ASCERTAIN temperature and humidity conditions, and
REGULATES systems of heaters, fans, and sprayers to
ENSURE conformance with specifications.

GIVES transplanting and cultivation instructions to coworkers, and
MONITORS activities to
ENSURE adherence to established plant-culture procedures.

SMALL-ENGINE MECHANIC

DOT 625 281 034

REPAIRS fractional-horsepower gasoline engines used to power lawnmowers, garden tractors, and similar machines,
USING hand tools:

LOCATES causes of trouble,
DISMANTLES engines,
USING hand tools, and
EXAMINES parts for defects.

REPLACES OR REPAIRS USING parts, such as rings and bearings, hand tools.

CLEANS AND ADJUSTS carburetor and magneto.

STARTS LISTENS TEST repaired engines and to sounds to performance.

REPLACES engines on machines.

SOIL CONSERVATIONIST

DOT 040 061 054

PLANS
AND
DEVELOPS coordinated practices for soil erosion control, moisture conservation, and sound land use:

CONDUCTS surveys and investigations on rural and urban planning, agriculture, construction, forestry, or mining on measures needed to

MAINTAIN
OR
RESTORE proper soil management.

PLANS soil management practices, such as crop rotation, reforestation, permanent vegetation, contour plowing, or terracing as related to soil and water conservation.

PREPARES soil conservation plans in cooperation with state, county, or local government, farmers, foresters, miners, or urban planners to

PROVIDE for use and treatment of land according to needs and capability.

APPLIES principles of two or more specialized fields of science, such as agronomy, soil science, forestry, or agriculture to

ACHIEVE objectives of conservation.

SURVEYOR HELPER

DOT 869 567 010

PERFORMS ASSIST SURVEYING **any of the following duties to in land:**

HOLDS ASSIST DETERMINING LAYING OUT level or stadia rod at designated points to in elevations and stakes for mapmaking, construction, mining, land, or other surveys.

CALLS OUT WRITES reading or station number and reading in notebook.

MARKS points of measurement with elevation, station number, or other identifying mark.

MEASURES USING distance between survey points, steel or cloth tape or surveyor's chain.

MARKS measuring points with keel (marking crayon), paintsticks, scratches, tacks, or stakes.

PLACES DRIVES USING stakes at designated points and them into ground at specified elevation, hammer or hatchet.

CUTS AND CLEARS brush and trees from line of survey, USING brush hook, knife, ax, or other cutting tools.

TRACTOR MECHANIC

DOT 620 **281** 058

DIAGNOSES mechanical failures of and
REPAIRS tractors and tractor components according to manuals, factory specifications, and knowledge of engine performances,
USING hand tools, power tools, and testing instruments:

ATTACHES compression, ignition, and timing test instruments to certain parts of tractor,
USING clamps and hand tools.

STARTS engine dials and
READS meters and gauges of testing equipment to
DIAGNOSE engine malfunction.

REMOVES AND DISASSEMBLES engine, transmission, and clutches,
USING hoists, jacks, and mechanic's hand tools.

INSPECTS parts for damage, and
VERIFIES dimensions and clearances of parts for conformance to factory specifications,
USING gauges, such as calipers, and micrometers.

REPLACES OR REPAIRS worn or damaged parts.

GRINDS RELINES AND valves,
ADJUSTS brakes,
TIGHTENS body bolts,
ALINES wheels, and
TUNES engine.

TREE-FRUIT-AND-NUT CROPS FARMER

DOT 403 161 010

PLANTS
AND
CULTIVATES
HARVESTS
APPLYING
trees, such as apple, orange, and walnut, and fruit and nut crops, knowledge of horticulture and market conditions:

DETERMINES varieties and quantities of trees to be grown, acreage to be tilled, and employees to be hired.

SELECTS
AND
PURCHASES tree stock and farm machines, implements, and supplies.

DECIDES when and how to
PLANT
BUD
GRAFT
CULTIVATE
IRRIGATE
AND
PRUNE trees and
HARVEST crop, on the basis of knowledge of tree-crop culture.

ATTACHES farm implements, such as plow, disc, and harrow, to tractor and
DRIVES tractor in fields to
TILL soil.

PLANTS root stock,
APPLIES fertilizers, insecticides, and fungicides, and
IRRIGATES fields.

(continued)

TREE-FRUIT-AND-NUT CROPS FARMER

PRUNES DEVELOP growing trees to desired size and shape.

ASSIGNS EXPLAINS duties to farmhands and orchard work techniques and safety regulations to inexperienced workers.

MAINTAINS employee and financial records.

ARRANGES with buyers for sale of crops.

LUBRICATES ADJUSTS AND MAKES minor repairs on farm machinery, implements, and equipment, USING oilcan, grease gun, and hand tools.

TREE PLANTER

DOT 452 **687** 018

PLANTS REFOREST seedling trees to timber lands or Christmas tree farms:

DIGS USING planting hole at predetermined spaced interval, mattock-like tool or dibble.

PLACES PACKS USING seedling in hole and soil around plant, foot or planting tool.

VEGETABLE FARMER

DOT 402 **161** 010

RAISES vegetables:

DETERMINES kind and amount of crop to be grown, according to market conditions, weather, and size and location of farm.

SELECTS AND PURCHASES AND ARRANGES seed, fertilizer, and farm machinery and with buyers for sale of crop.

HIRES AND DIRECTS farm workers engaged in **PLANTING CULTIVATING AND HARVESTING** crop, such as beans, onions, and peas.

PERFORMS various duties of farm workers, depending on size and nature of farm, including **SETTING-UP AND OPERATING** farm machinery.

VEGETABLE FARMWORKER I

DOT 402 663 010

DRIVES AND OPERATES **farm machinery to**
PLANT CULTIVATE AND HARVEST **vegetables, such as peas, lettuce, tomatoes, and lima beans:**

ATTACHES farm implements, such as plow, planter, fertilizer applicator, and harvester, to tractor and
DRIVES tractor in fields, to
PREPARE soil and
PLANT
FERTILIZE
AND
HARVEST crops.

[illegible]
HOES
AND
WEEDS row crops,
[illegible] hand implements.

IRRIGATES land to
PROVIDE sufficient moisture for crop growth,
USING irrigation method appropriate to crop or locality.

VEGETABLE HARVEST WORKER

DOT 402 687 014

HARVESTS vegetables, such as cucumbers, onions, lettuce, and sweet corn, by hand or
USING knife, according to method appropriate for type of vegetable:

ASCERTAINS picking assignment from supervisor and
PLACES work aids, such as buckets and tie wires, in assigned area.

PICKS vegetable from plant,
PULLS vegetable from plant or soil, or
CUTS vegetable from stem or root.

PUTS vegetables in container or
LAYS bunches of vegetables along row for collection.

CARRIES containers or armloads of bunched vegetables to collection point.

LOADS vegetables on trucks or field conveyors.

[redacted]

DOT 403 161 014

[redacted]

fruit bushes and vines and crops, such as grapes, cranberries, and strawberries, knowledge of growth characteristics of specific varieties and soil, climate, and market conditions:

[redacted] varieties and quantities of plants to be grown, acreage to be tilled, and employees to be hired.

[redacted] plant stock and farm machines, implements, and supplies.

[redacted] when and how to [redacted] plants, and [redacted] crop, based on knowledge of vine-crop culture.

[redacted] farm implements, such as harrow and ditcher, to tractor and [redacted] tractor in fields to [redacted] soil.

[redacted] farm machinery to [redacted] fertilizers, herbicides, and pesticides and [redacted] fruit boxes.

(continued)

VINE-FRUIT CROPS FARMER

[redacted] duties to, and
[redacted] activities of seasonal workers engaged in
[redacted]
[redacted]
[redacted] soil;
[redacted] plants; and
[redacted]
[redacted]
[redacted] crop.

[redacted]
[redacted]
[redacted] farm work techniques and safety regulations.

[redacted] employee and financial records.

[redacted] arrangements with buyers for sale and shipment of crop.

USING VIRGINIA VIEW TO OBTAIN OCCUPATIONAL INFORMATION

The Virginia Vital Information Education Workshops (VIEW) Microfiche Deck is one part of a career information delivery system sponsored by the Virginia Occupational Information Coordinating Committee to deliver educational and occupational information to citizens of the Commonwealth. Other means of delivering the career information are (1) the Toll-Free Career Information Hotline (1-800-542-5870); (2) publications, including the Dictionary of Licensed Occupations in Virginia, the Dictionary of Apprenticeships Occupations in Virginia, the Forum newsletter, and occupational briefs modified for making transparencies on 25 occupations for classroom use in career counseling and career education; and (3) the computerized delivery system used in conjunction with the microfiche deck.

The Virginia VIEW Career Information System is available at no cost to a variety of users and user agencies, including secondary and middle schools, community colleges, and private and public colleges and universities.

The Virginia VIEW Microfiche Deck contains 70 microfiche. The deck is divided into eight parts: 52 fiche cards containing 345 VIEWSCRIPTS (occupational briefs) arranged alphabetically within seven Data-People-Things Clusters; 4 fiche cards (tan) containing information on postsecondary schools in Virginia, including community colleges, two-year public and private institutions, public colleges and universities, and proprietary schools; 4 fiche

cards (white) on financial aid; 1 fiche card (gold) listing additional training and the vocational education directors; 1 fiche card (brown) on apprenticeship program in Virginia; 2 fiche cards (blue) on military training opportunities; 4 fiche cards (light green) containing information on post-secondary school programs and 1 fiche card (dark green) containing information on secondary school subjects.

Plans call for a microfiche deck to be issued each year, providing updated, current, and accurate information.

The 1982 Virginia VIEW Microfiche Deck presents information on 345 occupational titles and 1,269 related occupational specialties. The occupational titles were selected to represent the occupations in which most Virginians are presently employed based on data from the Virginia Employment Commission. The microfiche decks are distributed without cost to the user agencies who provide their own readers or reader printers.

A microcomputer system has been developed to be used in conjunction with the microfiche deck. The microcomputer system is based on a Virginia VIEW self-assessment, Career Search, which is designed to assess seven key areas: interests, areas of work, physical strengths, physical capabilities, working conditions, educational levels, and temperaments. The user is able to key the results of the Career Search into a microcomputer which then provides the user with a list of occupations that might be considered. It also directs the user to the appropriate microfiche to obtain information about the selected occupations. There is no charge for the microcomputer software; however, a user must have access to a microcomputer.

Teachers may obtain more information for student use of the system from their school librarian, their divisional director of vocational education, or the following:

Project Director
Virginia VIEW
Virginia Polytechnic Institute and State University
301 University City Office Building
Blacksburg, Virginia 24061
Phone: (703) 961-7158

SECTION II.

STUDENT ORGANIZATIONS

Each vocational student organization provides opportunities for students to: (1) exhibit pride in work; (2) demonstrate competencies related to the world of work; and (3) develop leadership abilities, responsible citizenship, and a realistic self-image. These goals are achieved through activities structured within each vocational program and course. Vocational student organizations provide a means through which students become involved in school and community activities, carry out individual or group projects related to career life goals, and meet with community leaders and employers in a variety of situations. The knowledge, skills, and attitudes developed through these organizations facilitate the students' transition from school to their chosen vocation and to responsible adulthood.

The Vocational Education Amendments of 1976, P.L. 94-482, place emphasis on ensuring that curriculum development activities will have an impact on instruction in vocational education classrooms. Each vocational service has an appropriate vocational student organization operating as an integral part of the instructional program.

On June 23, 1978, the Virginia State Board of Education approved the following policy standards for operation of vocational education programs:

- A local chapter of the appropriate vocational student organization is operating as an integral part of each vocational program field in the school.
- Vocational teachers are serving as advisors to the local chapter or a section of the vocational student organization.
- Participation of students in chapter instructional activities is required regardless of whether they are paid members of the organization.

Competency Development

through

FUTURE FARMERS OF AMERICA (FFA)

I. Description of Organization

The Future Farmers of America, known as FFA, is the national organization of, by, and for students enrolled in vocational agriculture under the provisions of the National Vocational Education Act. The FFA is an intra-curricular part of the public school agriculture classes and involves half a million young people in activities designed to provide practical experience in agriculture, leadership, cooperation, and citizenship.

II. Opportunities for Class or Laboratory/FFA Coordination

A. Leadership Development Activities

Students have the opportunity to:

1. Make democratic decisions related to the course of study:
   a. conduct necessary class and committee meetings;
   b. develop and conduct activities to support the course of study.
2. Demonstrate public speaking abilities by speaking to local organizations on class-related topics.
3. Attend and participate in local, regional, state, and national FFA leadership activities.
4. Conduct seminars, debates, panel and class discussions, and other group instruction activities as needed to support the course of study.

B. Community Agricultural Resources for Activities

Students have the opportunity to:

1. Invite guest speakers or technical consultants to class to support a particular unit of study.
2. Contact local agribusinesses or farmers to collect data for a unit of study.
3. Arrange field trips to local agricultural businesses.
4. Locate appropriate training stations for supervised occupational experience programs.
5. Obtain supplies, materials, and equipment to supplement laboratory and chapter activities.

C. School/Community Service Activities

Students have the opportunity to:

1. Conduct school or community service activities or projects that are part of the FFA chapter program of activities.

2. Participate in Building Our American Communities (BOAC) Program and the National FFA Safety Program to improve the school or community.

3. Assist other local community organizations with their improvement or service projects.

D. Enterprising Activities

Students have the opportunity to:

1. Encourage use of chapter and personal budgets to meet financial goals.

2. Conduct various enterprising activities designed to support the chapter program of activities.

3. Participate in or provide donations to community organizations or individuals requiring assistance.

E. Activities for Recognition

Students have the opportunity to become involved in:

1. Competitive events:

   a. Chapter participation in National Chapter Awards Program
   b. Member participation in National Proficiency Awards Program
   c. Member participation in local, regional, state, and national contests related to Agricultural Education
   d. Member recognition at local banquets for classroom, laboratory, and occupational experience program accomplishments.

2. Noncompetitive events:

   a. Member recognition for membership degrees
   b. Member participation in individual recognition programs of the FFA at the local level
   c. Member participation in achievement award program.

III. Other Programs, Publications, and Applications of the Student Organization to Competency-Based Education

A. Other Programs

1. Each FFA Chapter may be organized into 11 committees to conduct the following types of activities of the organization:

a. Supervised Agricultural Occupational Experience
b. Cooperation
c. Community Service
d. Leadership
e. Earnings, Savings, and Investments
f. Meetings
g. Scholarship
h. Recreation
i. Public Information
j. State and National Activities
k. Alumni Relations.

2. Chapter members participate in:

a. FFA-FHA Camp Program
b. National FFA Week
c. State and Local Agricultural Fairs.

B. Publications

1. Books available include:

a. Chapter Guide to FFA Activities
b. FFA Activity Handbook
c. FFA Advisors Handbook
d. Official Manual (FFA)
e. Student Handbook (FFA)
f. Virginia FFA Activity Handbook
g. Virginia Supervised Occupational Experience Record Book.

2. Periodicals available include:

a. Chapter Chats
b. The National Future Farmer.

SECTION III.

CLASSROOM MANAGEMENT SYSTEMS

If students in Agricultural Education programs and courses are to be provided with the instruction necessary for entry into an advanced vocational program or employment, then a systematic method of instruction must be used. In addition, the inclusion of the following unique requirements in competency-based education demands a higher degree of organization than may have been incorporated in traditional vocational instruction:

1. Validated task/competencies must be included in instruction.
2. Task/competencies must be specified to students prior to instruction.
3. Criterion-referenced measures must be administered to evaluate the student's mastery of each validated task/competency.
4. A system must exist for recording student achievement in regard to each validated task/competency.

The following questions should be considered during the establishment of classroom management (or instructional delivery) systems for competency-based instruction in Agricultural Education programs and courses:

1. How and when will students be informed of course or unit objectives and requirements?
2. How will instructional content and activities be sequenced in the course?
3. Will students learn in an independent or group setting?
4. Will a variety of instructional methods and strategies be used?
5. How will laboratory and lecture activities be integrated?
6. How will slow and fast learners be accommodated?
7. How will FFA activities be integrated into instruction?
8. What will be the methods and intervals of student evaluation?

9. How and when will student achievement be documented on the competency record?

10. How will students who transfer from another school or program be placed at an appropriate level in the program?

The purpose of this section is to illustrate several samples of classroom management systems developed by teachers who have incorporated competency-based vocational education techniques into their courses and programs. The systems have been field tested and revised for use in laboratories and classrooms in Virginia.

The following classroom management systems are discussed in this section:

Lesson Plans
Student Task Sheets
Learning Contracts
Self-Contained Learning Systems

It is important to note that any combination of the above systems may be used by the individual classroom teacher in actual delivery of instruction.

LESSON PLANS

Competency-based education requires that instructional content within vocational education courses be based upon predetermined competencies and objectives. Ensuring the actual achievement of intended course outcomes requires a very high degree of organization in daily planning for instruction. The lesson plan is a most effective tool for organizing and implementing instruction within each class session.

The lesson plan may be viewed as a detailed part of a blueprint for the total course. It ensures that the instructional content for each class session is related to overall course objectives and that content across class sessions is sufficiently inclusive and sequenced so that predetermined course outcomes are, in fact, achieved. Additionally, it provides for effective use of instructional activities and materials in delivering the instructional content of each class session.

Lesson plan format may vary according to teacher preference or local requirements. The format corresponds to that of the task/competency framework pages in the task analyses package developed for each agricultural education course (see Figure 1).

The listing which follows describes the components of the sample lesson plan (Figure 2). Where appropriate, the component is cross-referenced to the corresponding section(s) of Figure 1, and referral to that section in an actual task analyses package provides the teacher with useful information in developing the lesson plan component.

A blank lesson plan form also is included in this section.

Lesson Plan Components

LESSON TITLE--a brief phrase summarizing the content of the lesson; primarily serves as aid to instructor in readily locating a needed plan.

COURSE--may include more than one listing in cases where a given task/competency is identified for inclusion in several courses. (Figure 1, #4)

INSTRUCTIONAL UNIT--a distinct grouping of related task competencies; Duty Area may be listed here. (Figure 1, #1)

TASK/COMPETENCY--the knowledge, skills, or attitudes which the learner should possess after the lesson plan is implemented. (Figure 1, #2)

PERFORMANCE OBJECTIVE--a statement of the behavior or performance to be exhibited by the student after instruction, the condition under which the behavior takes place, and the criterion level or standard which the student must meet for task mastery. (Figure 1, #5)

TOOLS/MATERIALS--a listing of any equipment or supplies that will have to be secured or developed by the instructor in implementing lesson plan activities. (Figure 1, #9)

AUDIOVISUAL MATERIALS--a listing of any nonprint materials used in lesson plan activities. (Figure 1, #10)

REFERENCES--a listing of any printed materials to be used by students in lesson plan activities; may also include resources that are helpful to the instructor in implementing the lesson, but not intended for direct student use. (Figure 1, #11)

STUDENT ASSIGNMENTS--identification of activities the student will complete to reinforce or apply instruction. (Figure 1, #6 & 8)

PRESENTATION--a description of all lesson plan activities, listed in sequence and grouped according to the following types and purposes: (Figure 1, #5 & 8)

- Introduction--to orient, to motivate, to provide continuity;
- Presentation--to bring student face to face with the new concept, habit, or skill; to show; to explain; to demonstrate; to relate to learner experience;

- Discussion--to clarify, to expand; to reinforce, to correct; to allow learner to verbalize, question, respond, and provide evidence of concept understanding;

- Application--to apply, use, or verify concept; to build motor skills; to build habit; to develop attitudes through experiences;

- Evaluation--to provide periodic closure; to modify concept; to expand divergent thinking; to summarize; to test.

CRITERION-REFERENCED MEASURE--identification of the means of student evaluation and the minimum standard of performance accepted for mastery; should correspond with performance objective. (Figure 1, #7)

SPECIAL NOTES--for instructor's notations concerning evaluation of the plan after it is implemented; may contain suggestions for future use of the plan.

TASK ANALYSES FRAMEWORK

Application

DUTY AREA
①

PROGRAM
③

TASK / COMPETENCY
②

COURSE
④

PERFORMANCE OBJECTIVE
⑤

SELECTED ENABLING OBJECTIVES
⑥

CRITERION-REFERENCED MEASURE
⑦

SELECTED INSTRUCTIONAL ACTIVITIES
⑧

SELECTED TOOLS AND MATERIALS
⑨

SELECTED AUDIOVISUAL MATERIALS
⑩

SELECTED REFERENCES
⑪

94

Figure 1

Sample

LESSON PLAN

by

Name of Instructor

Using Pesticides
Lesson Title

④ Agricultural Business III (8022)
Course

① Selling and Applying Agricultural Chemicals
Instructional Unit

② TASK/COMPETENCY: (knowledge, skills, or attitudes student gains from instruction)

13.1 Read and interpret information on pesticide labels.

⑤ PERFORMANCE OBJECTIVE: (expected conditions, performance, and criterion or standard)

P13.1 Given instruction on pesticide application, list the information that appears on pesticide labels, including eight of the ten categories of information found in the Pesticide Applicator Certification Training Manual.

⑨ TOOLS/MATERIALS:

Pesticide labels

⑩ AUDIOVISUAL MATERIALS:

Understanding and Safe Use of Pesticides, Vocational Agriculture Service, College of Agriculture, University of Illinois.

⑪ REFERENCES:

Applying Pesticides, American Association for Vocational Instructional Materials.
Doane's Farm Management Guide, Doane Agricultural Service, Inc.
Fertilizer, Chemicals and Seed, pp. 76-82, Farrington, Sartor, and Vaughn.
Pesticide Applicator Certification Training Manual, p. 48, U.S. Department of Agriculture, Cooperative Extension Service.

⑥ STUDENT ASSIGNMENT(S):

⑧ Read and study the Pesticide Applicator Certification Manual and learn the ten categories of information pertaining to pesticide labels.
Study and define pesticide terms.
Define categories of toxicity.
Describe the purpose of pesticide labels.
Identify the governmental agency that regulates pesticide labels.

PRESENTATION: (Introduction, presentation, discussion, application, & evaluation)
⑤⑧

I. Introduction (Motivation)

A. Why label pesticides?
B. Why categorize information on pesticide labels?
C. What are possible results of not labeling pesticides?

II. Presentation

A. Introduce students to several types of pesticide labels.
B. Define pesticide terms and categories of toxicity.
C. Introduce students to the ten categories of information.

III. Discussion

A. What are the kinds of pesticide labels?
B. What types of information should the labels contain?
C. What are the ten categories of label information?
D. What governmental agency regulates pesticide labels?

IV. Application

A. With labels brought to class, have students identify types of labels and types of information on them.
B. Have students categorize label information according to the ten categories found in the Pesticide Applicator Certification Training Manual.
C. Have students exchange labels and identify and categorize label information.

V. Evaluation

A. Performance of label identification in relation to criterion-referenced measure.
B. Performance on this part of final test on Selling and Applying Agricultural Chemicals.

CRITERION REFERENCED MEASURE:

C13.1 ⑦ List at least eight of the ten categories of information that appear on pesticide labels, as indicated in the Pesticide Applicator Certification Training Manual.

SPECIAL NOTES: (Resource persons, if any; results and follow-up)

I. Lesson plan is designed to require two one-hour class periods.

II. Salesperson from local agricultural supplies business would be a good resource person and could be invited to speak to class on this subject.

LESSON PLAN

by

_____

_____

Lesson Title

_____ _____

Course Instructional Unit

TASK/COMPETENCY: (knowledge, skills, or attitudes student gains from instruction)	
PERFORMANCE OBJECTIVE: (expected conditions, performance, and criterion or standard)	
TOOLS/MATERIALS:	AUDIOVISUAL MATERIALS:
REFERENCES:	
STUDENT ASSIGNMENT(S):	

PRESENTATION: (Introduction, presentation, discussion, application, & evaluation)

CRITERION REFERENCED MEASURE:

SPECIAL NOTES: (Resource persons, if any; results and follow-up)

STUDENT TASK SHEETS

The student task sheet is primarily a handout and may include the following components, as displayed in the sample provided:

1. The task/competency statement
2. The performance objective developed to correspond to the task/competency
3. The enabling objectives which identify subtasks leading to mastery of the overall objective
4. The planned learning activity(ies) corresponding to each enabling objective
5. A statement of the criterion-referenced measure for the identified task/competency
6. Any necessary directions for completing one or more learning activities or tasks
7. A section for evaluation of the completed task(s) for recordkeeping and feedback purposes.

As a classroom management tool, the student task sheet may provide the following benefits to both the instructor and the student in competency-based education:

1. In the group instruction setting, duplication and distribution of the completed student task sheet prior to instruction allows the student to be informed of upcoming instructional plans and requirements, thereby fulfilling the CBE requirements of prior student notification of performance objective and criterion-referenced measure.
2. Once task/competencies for a given course have been identified, the instructor may use the student task sheet as a planning form, ensuring that each task is included and adequately planned for in instruction.
3. Prior completion of all components except the learning activities section provides an instrument for cooperative planning between the student and teacher. In this manner, the student task sheet is useful in selecting learning activities which are both tailored to the individual student and aimed at mastery of identified objectives and tasks.

4. The task instruction section of the form can be used to give the student detailed directions for completing any learning activity or hands-on task included in the performance objective.

5. Recording dates and evaluation comments corresponding to activities and the criterion-referenced measure renders the sheet a record-keeping device for the teacher or a means of feedback for the student.

Included are a sample student task sheet and a blank form which can be extracted and copied for use in the classroom.

STUDENT TASK SHEET

TASK/COMPETENCY: 13.1 Read and interpret information on pesticide labels.

PERFORMANCE OBJECTIVE: P13.1 Given instruction on pesticide application, list the information that appears on pesticide labels, including eight of the ten categories of information found in the Pesticide Applicator Certification Training Manual.

ENABLING OBJECTIVES:	LEARNING ACTIVITIES:	COMPLETED:
E13.1.1 Define pesticide terms.	1. Read and study the Pesticide Applicator Certification Training Manual; identify the ten categories of pesticide label information.	
E13.1.2 Define categories of toxicity.	2. Bring labels to class; list types of information found on the labels; categorize the information, according to the Pesticide Applicator Certification Manual; switch labels with other students and repeat exercise.	
E13.1.3 Describe the purpose of pesticide labels.	3. Write a short paragraph on the purpose of pesticide labels.	
E13.1.4 Identify the governmental agency that regulates pesticide labels.	4. Participate in discussion on governmental regulation of pesticide labels.	

CRITERION-REFERENCED MEASURE:

C13.1 List at least eight of the ten categories of information that appear on pesticide labels, as indicated in the Pesticide Applicator Certification Training Manual.

TASK INSTRUCTIONS:

1. Look up pesticide terms in reference books supplied by the instructor.
2. Practice listing the types of information found on pesticide labels.
3. Study the ten categories of label information, as found in the Pesticide Applicator Certification Training Manual.
4. When confident of ability to identify and categorize pesticide label information, take a quiz on the topic.
5. Ask instructor to evaluate work.

STUDENT EVALUATION:

Completion Date_____

Grade_____

Comments:

STUDENT TASK SHEET

TASK/COMPETENCY:

PERFORMANCE OBJECTIVE:

ENABLING OBJECTIVES:	LEARNING ACTIVITIES:	COMPLETED:

CRITERION-REFERENCED MEASURE:

TASK INSTRUCTIONS:

STUDENT EVALUATION:

Completion Date_____

Grade_____

Comments:

LEARNING CONTRACTS

The learning contract is a management tool which allows the instructor and the individual student to agree, in advance, upon the components and outcomes of instruction. The typical learning contract contains the following elements:

1. The activities to be completed by the student
2. The time requirements for completion of designated activities
3. The expected quality of the student's performance
4. A final grade agreement
5. Signatures of the instructor and student.

The learning contract depicts the learning atmosphere as one that involves shared responsibility and mutual obligation on the part of the student and the instructor. In essence, the instructor agrees to provide the necessary conditions for completion of contracted activities (e.g., information, directions, materials, time) and to evaluate the student's performance according to predetermined criteria. In turn, the student agrees to perform the given activities, within a specified period of time and to an expected standard of quality.

Use of the learning contract in competency-based instruction within vocational education classrooms offers the following benefits:

1. Learning contracts aid the teacher in organizing instruction so that all identified competencies are covered in the duration of the course. Individual contracts may be designed to incorporate related competencies so that time requirements for completion of all needed contracts coincide with the length of the course.

2. Learning contracts may involve the use of an unlimited variety of instructional methods, strategies, activities, materials, and grouping schemes.

3. Learning contracts accommodate instruction in the same content in classrooms of variable student academic skill levels and learning rates. For example, activities selected for slower learners may involve a greater degree of repetition or teacher direction; those selected for faster, more academically proficient students may involve increased learner independence and include additional enrichment projects.

4. Establishment of learning contracts provides a means for compliance with the competency-based education requirement that students be informed of instructional tasks and performance expectations prior to instruction.

5. Student motivation is enhanced by the student's involvement in contract preparation and awareness, prior to instruction, of what is expected of him or her. Motivation on a day-to-day basis is further enhanced in that the relevancy of individual activities to the overall goals of instruction is more clearly visible as is the progress toward mastery of those goals.

LEARNING CONTRACT

Student:_____

Course:_____

I,_____,
(name of student)

agree to learn the competencies and complete the projects listed below during the six-week grading period of _____.
(dates)

Competencies/Projects:

_____

_____

_____

_____

_____

_____

_____

_____

I further agree that the quality of my completed work must comply with the standards identified for each competency.

I further agree that, upon satisfactory completion of the above, I will receive a final grade of _____ for the stated grading period.
(grade)

_____ _____
Student Date

_____ _____
Instructor Date

SELF-CONTAINED LEARNING SYSTEMS

Organization for effective instructional delivery in competency-based education may be achieved through the development of self-contained learning systems, such as those incorporating use of modules or learning activity packages (LAPs). A self-contained learning system for a given Agricultural Education course might contain several packets, each of which is designed for instruction in a group of related competencies. By satisfactorily and successively proceeding through system packets, the student eventually is able to master all task/competencies identified for the course.

The term self-contained, as applied to learning systems, may have either of two meanings. Some systems, or packets within the system, contain all information, directions, and materials needed by the student for completion of system or packet activities. More often, however, packet directions refer the student to the use of additional materials outside of the packets (e.g., texts, audiovisual materials, tools and equipment). In the case of the latter, the system remains self-contained in that it contains the procedures for use of all materials, whether they are located within or outside the system itself.

The procedural steps for student completion of self-contained learning system packets are represented by the sequence chart included in this section. The following suggestions are offered for instructors using self-contained learning systems as a means of instructional delivery in the classroom:

- Use or development of self-contained learning systems that include activities centered around the use of printed materials, requiring only that students receive information through reading and respond through writing, should be avoided. Such materials are most undesirable, both in terms of the limited variation across student activities and the obvious difficulty incurred by students who are less proficient readers or who

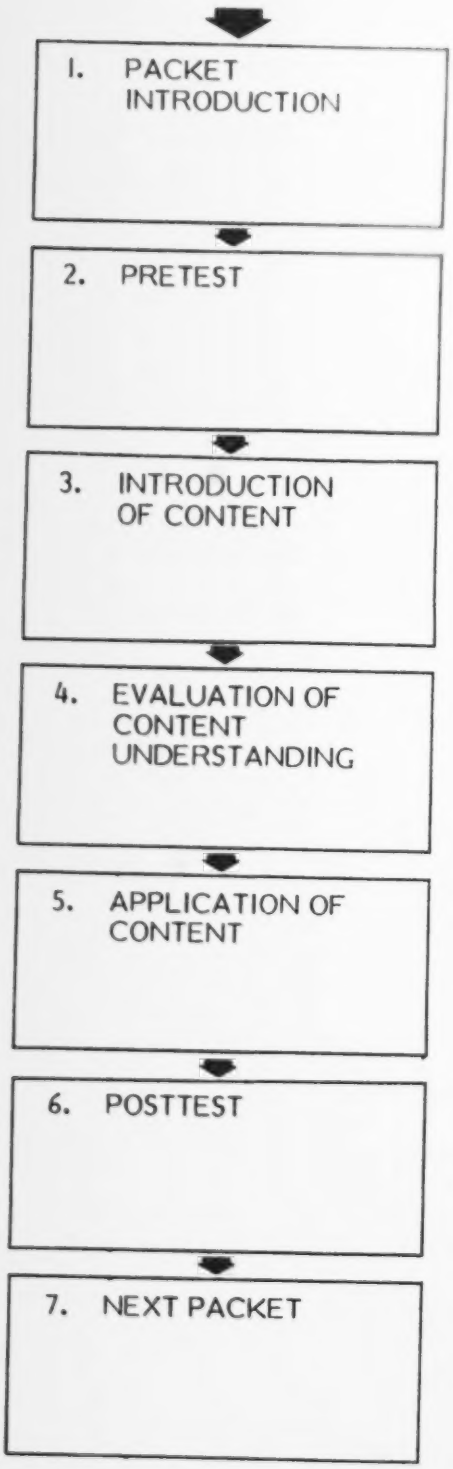
learn best by other means of intake. The introduction of content (step 3 of the sequence chart) should involve the use of a variety of instructional methods and materials. Group activities and presentation methods should be incorporated for students involved in similar task/competency areas. Because self-contained learning systems entail a high degree of assessment, it is essential that pencil-and-paper tests be supplemented by other assessment devices.

- Consistent assignment of self-contained learning system packets for individual and independent student completion should also be avoided. For a desired increase in the socialization of learning, group activities should be incorporated into the introduction and application of packet content (steps 3 and 5 of the sequence chart). In the event of packet assignment for independent completion, the student's performance should be monitored frequently in order to ensure appropriate application and direction.

- Whenever assessment during or at the end of packet completion indicates that review or repetition of content or activities is needed (steps 4, 5, and 6 of sequence chart), it is recommended that this not simply involve duplication of the initial activity. Needed review may indicate that initial methods or materials were not effective in terms of the individual student. That student may more easily achieve mastery of the same skills through the use of different activities or materials.

SELF-CONTAINED LEARNING SYSTEM SEQUENCE

Student Enters



The student carefully reviews the packet introduction, directions, enabling objectives, and performance objectives.

The student completes the packet pretest. If the established minimum score for mastery is obtained, the student proceeds to the next packet (Step 7); if not, the student proceeds to Step 3 within the same packet.

The instructional content of the packet is introduced to the student.

The student completes a response sheet which assesses his or her mastery of the content introduced in Step 3. If the established minimum score for mastery is obtained, the student proceeds to Step 5; if not, the student reviews content until mastered.

The student completes an activity designed to apply knowledge of content displayed in Step 4. Activities may include research assignments, project completion, or performance of "hands-on" tasks. When specified standards of performance are met, the student proceeds to Step 6.

The student completes the posttest. If the established minimum score for mastery is obtained, the student proceeds to the next packet; if not, Steps 3 through 5 are reviewed until the minimum score is obtained.

Steps 1 through 6 are continued for each successive packet until all system packets have been completed.

SECTION IV.

RECORDING SYSTEMS

Competency-based vocational education in Virginia requires a system for documenting competencies which have been achieved by each student. This information is essential to the student, teacher, and employer. For the student, it provides a record of successful progress through the vocational program. If the student should transfer to another school or enter the community college system, the record will assist in a smooth transition--eliminating the need to repeat skills and knowledge learned. Therefore, the competency record facilitates articulation between and among vocational programs at different levels of instruction. The teacher uses the competency record for evaluation and planning purposes in the course. Perhaps the most important use of a competency recording system is the provision of specific job-entry information to prospective employers.

This section contains information on the characteristics of grading and recording systems for competency-based education. The recording systems were designed for use by the instructor, student, student records personnel, and the employer. Samples of psychomotor grading systems and a system for combining affective, cognitive, and psychomotor grades also are included.

GRADING

Local school boards establish the grading system for their school divisions; therefore, any proposed system in which competency attainment is converted to an overall grade must be based on local requirements. This must be underscored in considering principles of CBE grading.

It is generally agreed that grading each competency should go beyond the pass-fail stage and should include an indication of the degree of skill the student has demonstrated. In addition, the grade may be based on more than just the performance (psychomotor) level and include the knowledge (cognitive) and personal behavior (affective) areas. The time required by a student to reach a specific performance level should not be considered in rating a student.

Grades from any system will, of course, need to be converted to the conventional A, B, C, D, F system for reporting of grades. The grade for each individual competency must, though, be retained in a student file for use by employers, etc.

Passing (or failing) grades for a course can be accomplished in several ways, such as establishing a minimum number of competencies which must be mastered fully, focusing on the number of competencies mastered, or averaging of the scores on only those competencies actually mastered.

CHARACTERISTICS OF GRADING SYSTEMS FOR CBE

1. Each student should be graded on his or her own level of achievement and not in comparison to other students.

2. The minimum acceptable level of achievement should be based on the minimum entry level in the industry or trade.

3. The grading system should be based on nonpunitive strategies. Grades for competencies achieved should not be lowered by competencies not achieved.

4. The system should provide recognition for achievement beyond the minimum level.

5. In an articulated program, both secondary and post-secondary instructors must agree on the same criteria or standards to be achieved for each competency.

6. The evaluation system (letter grade, points, etc.) must be related to the competency criteria standard. For example, the terms excellent, good, average for the letter grades A, B, C should not be used.

7. The grading composition (e.g., percentage for attendance, attitude, etc.) must be made known to the student. It is suggested that three grades be given--one for performance, one for attendance/attitudes, and one for technical knowledge.

8. A minimum number of competencies should be equated to different letter grades. For example, a student receiving an A grade must have achieved 90 percent of the competencies for the occupation.

9. The time required for a student to master a competency should not be considered in rating a student, except as reflected in #8, above.

10. Letter grades should not be placed on competency sheets, but should be used, as appropriate, on official transcripts and on reports to parents.

11. A point system should be used for all competency-based courses. This allows for a standard grade translation.

PSYCHOMOTOR GRADING

4, 3, 2, 1, 0 System

This system is the most widely used and is recommended since it easily converts to the A, B, C, D, F and decimal systems, A being 4 and F being 0. An average of 3.7 would be a grade of 94.25 percent, etc.

4--Highly proficient: The student can complete task quickly and accurately, can direct others in how to do task, and needs only normal supervision.

3--Competent: The student can complete all parts of the task, needs only a spot check of completed work, meets minimum entry level requirements, and needs job entry supervision.

2--Partially proficient: The student can complete most parts of the task, needs help only on hardest parts, may not meet all job-entry level requirements for speed and accuracy, and needs close supervision.

1--Extremely limited: The student can complete simple parts of task, needs to be told or shown how to do most of task, and needs extremely close supervision.

0--The student cannot perform any part of task at a level sufficient for participation in a work environment.

X--The student did not attempt the task.

5, 4, 3, 2, 1 System

5--The student can complete all parts of the task accurately and independently in less than the allotted time.

4--The student can complete all parts of the task with little assistance in the allotted time.

3--The student can complete most parts of the task accurately with some assistance.

2--The student can complete some parts of the task but needs help on most difficult parts.

1--The student's attempt was incomplete or incorrect.

X--The student did not attempt the task.

3, 2, 1, 0 System

3--The student can perform task/competency above job-entry level.

2--The student can perform task/competency at job-entry level.

1--The student can perform task/competency below job-entry level.

0--The student cannot perform task/competency.

X--The student did not attempt the task.

6, 5, 4, 3, 2, 1, 0 System

6--The student can perform this task without supervision or assistance and can lead others in performing it.

5--The student can perform this task without supervision or assistance, demonstrating initiative and adaptability to special problem situations.

4--The student can perform this task without supervision or assistance, showing proficiency in speed and quality.

3--The student can perform this task satisfactorily without assistance or supervision.

2--The student can perform this task satisfactorily but requires supervision and/or assistance.

1--The student can perform some parts of this task satisfactorily but requires instruction and supervision to perform entire task.

0--The student has some knowledge and limited experience but not sufficient for participation in a work environment.

GRADING SYSTEM INCLUDING AFFECTIVE, COGNITIVE, AND PSYCHOMOTOR ABILITIES

1. The cognitive grade should be determined from average of tests and quizzes.

2. The affective grade should be determined by considering the following on a 4, 3, 2, 1 or 5, 4, 3, 2, 1 or similar system:

   a. Use of correct safety procedures
   b. Good use of time
   c. Punctuality
   d. Ability to follow instructions
   e. Ability to work well with others
   f. Care of tools, equipment, and building
   g. Pride in workmanship
   h. Regular attendance.

3. The psychomotor grade should be determined from a 4, 3, 2, 1 or 5, 4, 3, 2, 1 or similar system.

4. The three grades should be averaged in the following way:

   Psychomotor grade x .5 + affective grade x .25 + cognitive grade x .25 = final grade.

CHARACTERISTICS OF RECORDING SYSTEMS FOR CBE

1. A common recording system should be used at both high school and community college levels.

2. The recording system must be an official school record and should be part of students' permanent files.

3. The recording system must contain a listing of all competencies in the occupational program.

4. A rating system should identify competencies achieved, designate the level of student performance, and provide an interpretation of the rating scale.

5. The record should include as a minimum:

   a. Occupational title
   b. Signatures of student, instructor, and school official
   c. Competency list.

Examples of several types of recording forms follow. The individual student record forms designate the task/competencies identified in an Agricultural Education program. These are useful in maintaining an ongoing record of a student's progress through a program and, as such, are appropriate for inclusion in a student's permanent file. Two examples of student record forms are included. Type A incorporates both secondary and postsecondary programs, while Type B records achievement in only one program. Sample and blank forms for both types are given.

Class progress charts also designate the task/competencies identified in a specific Agricultural Education course. The usefulness of these charts, however, is in their planning, organizational, and evaluative aid to the individual course instructor. Examples of two class program charts are included. Sample and blank forms are shown for both types.

COMPETENCY RECORD

NAME _____ SSN _____ SCHOOL(S) _____

SECONDARY PROGRAM Agricultural Business V (8026) INSTRUCTOR _____

POSTSECONDARY PROGRAM _____ INSTRUCTOR _____

STUDENT'S SIGNATURE _____ DATE _____

GRADING SYSTEM*
4--Highly proficient
3--Competent
2--Partially proficient
1--Limited
0--Cannot perform
X--Task not attempted
*Detailed explanation on reverse side

PERSONAL CHARACTERISTICS	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS
Uses time well						
Is punctual						
Follows instructions						
Works well with others						
Takes care of tools and equipment						
Takes pride in work						
Attends regularly						
Is ambitious						
Communicates well with others						

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS
3.7 Maintain an accurate inventory						
3.8 Identify traits of profitable farmer						
3.9 Use business goals for preparing budget						
3.10 Define business terms						
3.11 Lay out employee's weekly schedule						
3.12 Evaluate employee's performance						
3.13 List real estate tax regulations						
3.14 Interpret a financial statement						
3.15 Establish retail prices						
3.16 Prepare income and expense budget						

GRADING SYSTEM

4--Highly proficient: The student can complete task quickly and accurately, can direct others in how to do task, and needs only normal supervision.

3--Competent: The student can do all parts of the task, needs only spot check of completed work, meets minimum entry-level requirements, and needs job entry supervision.

2--Partially proficient: The student can do most parts of the task, needs help only on hardest parts, may not meet all job entry-level requirements for speed and accuracy, and needs close supervision.

1--Limited: The student can do simple parts of task, needs to be told or shown how to do most of task, and needs extremely close supervision.

0--The student cannot perform any part of task at a level sufficient for participation in a work environment.

X--The student did not attempt the task.

STUDENT RELEASE

I, _____, hereby authorize the release of the information on this form for the purpose of awarding me credit for the competencies I have mastered.

_____
Signature

COMPETENCY RECORD

NAME _____ SSN _____

Ag. Bus. V

Page 2 of 3

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS
4.14 Plan and present a sales promotion meeting						
5.8 Make a follow-up call or visit						
5.9 Develop sales effort master plan						
5.10 Develop a legal sales contract						
5.11 Analyze salesperson's performance						
5.12 Demonstrate creative selling techniques						
13.9 Recommend kinds and rates of chemicals to use						
13.10 Mix chemicals and carrying agents						
13.11 Follow accepted procedures in pesticide poisoning						
13.12 Repair sprayer pump						
13.13 Recognize symptoms of pesticide damage						
6.1 Interpret state labor laws						
7.3 Prepare customer account statements						
7.4 Prepare written report						
7.5 Prepare letters to customers						
8.4 Identify factors influencing production						
8.5 Determine transportation for product						
9.12 Use grain grading equipment						
9.13 Operate grain heat detecting devices						
9.14 Plan a mechanical feeding system						
9.15 Develop machinery program plan						

COMPETENCY RECORD

Ag. Bus. V

NAME _____ SSN _____

Page 3 of 3

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS
10.14 Determine hybrid seed corn selection criteria						
10.15 Develop crop program budget						
10.16 Develop crop marketing plan						
10.17 Develop plan for irrigation system						
12.1 Balance rations						
12.2 Recommend livestock additives and medications						
12.3 Formulate feeds						
12.4 Evaluate livestock quality and recommend feeding program						
12.5 Compute feed requirements						
12.6 Trace digestive passage of feed						

COMPETENCY RECORD

NAME _____ SSN _____ SCHOOL(S) _____

SECONDARY PROGRAM _____ INSTRUCTOR _____

POSTSECONDARY PROGRAM _____ INSTRUCTOR _____

STUDENT'S SIGNATURE _____ DATE _____

GRADING SYSTEM*
4--Highly proficient
3--Competent
2--Partially proficient
1--Limited
0--Cannot perform
X--Task not attempted
*Detailed explanation on reverse side

PERSONAL CHARACTERISTICS	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS
Uses time well						
Is punctual						
Follows instructions						
Works well with others						
Takes care of tools and equipment						
Takes pride in work						
Attends regularly						
Is ambitious						
Communicates well with others						

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS

Student Record Form--Type A

GRADING SYSTEM

4--Highly proficient: The student can complete task quickly and accurately, can direct others in how to do task, and needs only normal supervision.

3--Competent: The student can do all parts of the task, needs only spot check of completed work, meets minimum entry-level requirements, and needs job entry supervision.

2--Partially proficient: The student can do most parts of the task, needs help only on hardest parts, may not meet all job entry-level requirements for speed and accuracy, and needs close supervision.

1--Limited: The student can do simple parts of task, needs to be told or shown how to do most of task, and needs extremely close supervision.

0--The student cannot perform any part of task at a level sufficient for participation in a work environment.

X--The student did not attempt the task.

STUDENT RELEASE

I, _____, hereby authorize the release of the information on this form for the purpose of awarding me credit for the competencies I have mastered.

_____
Signature

COMPETENCY RECORD

NAME _____ SSN _____ Page _____ of _____

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS

COMPETENCY RECORD

NAME _____ SSN _____ Page _____ of _____

TASK/COMPETENCIES	SECONDARY			POSTSECONDARY		
	GRADE	DATE	INITIALS	GRADE	DATE	INITIALS

VOCATIONAL EDUCATION
COMPETENCY RECORD

Name of Student _____

School _____

Program Area: Agricultural Business

Course Title: Agricultural Business V

CIP Code No. 01.0101

VA Course No. 8026

CERTIFICATION OF COMPETENCY

I hereby certify that the student named above has achieved the level of proficiency at the time of testing shown for each of the competencies on the attached list and has completed _____ hours of instruction with an attendance rate of _____ percent.

_____
Instructor's Signature

_____
Date

ADDITIONAL COMMENTS:

_____

_____

_____

_____

_____

INTERPRETATION OF SYMBOLS AND STUDENT SCORES

PERFORMANCE LEVEL

Proficiency 4:	HIGHLY PROFICIENT: The student can complete task quickly and accurately, can direct others in how to do the task, and needs normal supervision (94%-100%).
Proficiency 3:	COMPETENT: The student can do all parts of task, meets minimum local demands for speed and accuracy, and needs job entry supervision (87%-93%).
Proficiency 2:	PARTIALLY PROFICIENT: The student can do most parts of task, needs help only on hardest parts, may not meet local demands for speed and accuracy, and needs close supervision (79%-86%).
Proficiency 1:	EXTREMELY LIMITED: The student can do simple part of task, needs to be told/shown how to do most of the task, and needs extremely close supervision (70%-78%).
Proficiency 0:	The student's degree of skill is below minimally acceptable performance level (69% or below).

KNOWLEDGE LEVEL

Knowledge Level A:	OPERATING PROFICIENCY: The student can identify, measure, and use troubleshooting techniques to resolve task-related problems and can evaluate conditions and make proper decisions (94%-100%).
Knowledge Level B:	TECHNIQUES AND PRINCIPLES: The student can explain how and when task must be done and why each step is needed, can interpret written and oral instructions, and can analyze facts/principles (87%-93%).
Knowledge Level C:	PROCEDURES: The student can name most steps in task, needs help interpreting written instructions, and can explain basic facts and state general principles (79%-86%).
Knowledge Level D:	NOMENCLATURE: The student can identify parts and tools, and understand simple facts about task, and can identify related basic facts and terms (70%-78%).
Knowledge Level E:	The student's knowledge is below minimally acceptable standard (69% or below).

WORK HABITS AND ETHICS

Level A:	HIGHLY ACCEPTABLE: This is an area in which extraordinary strength is shown.
Level B:	VERY ACCEPTABLE: This is an area in which more than average strength is shown.
Level C:	ACCEPTABLE: This is an area in which average strength is shown.
Level D:	PARTIALLY ACCEPTABLE: This is an area in which some improvement is needed.
Level E:	NOT ACCEPTABLE: This is an area needing considerable improvement.

Name _____ Program Area Agricultural Business

Course Title Agricultural Business V

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	
3.7	Maintain an accurate inventory											
3.8	Identify traits of profitable farmer											
3.9	Use business goals for preparing budget											
3.10	Define business terms											
3.11	Lay out employee's weekly schedule											
3.12	Evaluate employee's performance											
3.13	List real estate tax regulations											
3.14	Interpret a financial statement											
3.15	Establish retail prices											
3.16	Prepare income and expense budget											
4.14	Plan and present a sales promotion meeting											
5.8	Make a follow-up call or visit											
5.9	Develop sales effort master plan											
5.10	Develop a legal sales contract											
5.11	Analyze salesperson's performance											
5.12	Demonstrate creative selling techniques											
13.9	Recommend kinds and rates of chemicals to use											
13.10	Mix chemicals and carrying agents											
13.11	Follow accepted procedures in pesticide poisoning											

Name _____ Program Area Agricultural Business

Course Title Agricultural Business V

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	
13.12	Repair sprayer pump											
13.13	Recognize symptoms of pesticide damage											
6.1	Interpret state labor laws											
7.3	Prepare customer account statements											
7.4	Prepare written report											
7.5	Prepare letters to customers											
8.4	Identify factors influencing production											
8.5	Determine transportation for product											
9.12	Use grain grading equipment											
9.13	Operate grain heat detecting devices											
9.14	Plan a mechanical feeding system											
9.15	Develop machinery program plan											
10.14	Determine hybrid seed corn selection criteria											
10.15	Develop crop program budget											
10.16	Develop crop marketing plan											
10.17	Develop plan for irrigation system											

Name _____ Program Area Agricultural Business

Course Title Agricultural Business V

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	
12.1	Balance rations											
12.2	Recommend livestock additives and medications											
12.3	Formulate feeds											
12.4	Evaluate livestock quality and recommend feeding program											
12.5	Compute feed requirements											
12.6	Trace digestive passage of feed											

Name _____ Program Area Agricultural Business

Course Title Agricultural Business V

NO.	EDUCATION/TECHNICAL KNOWLEDGE/ JOB PHYSICAL PROFILE Examples: 1. Uses instructions furnished in written or oral form 2. Able to use fingers, hands, arms to reach, handle,	PERFORMANCE					KNOWLEDGE				
		4	3	2	1	0	a	b	c	d	e

NO.	WORK HABITS AND ETHICS Examples: 1. Accepts constructive criticism 2. Demonstrates correct safety practices	WORK HABITS AND ETHICS				
		A	B	C	D	E

Student Record Form--Type B

V O C A T I O N A L E D U C A T I O N
C O M P E T E N C Y R E C O R D

Name of Student _____

School _____

Program Area: _____

Course Title: _____

CIP Code No. _____

VA Course No. _____

CERTIFICATION OF COMPETENCY

I hereby certify that the student named above has achieved the level of proficiency at the time of testing shown for each of the competencies on the attached list and has completed _____ hours of instruction with an attendance rate of _____ percent.

_____
Instructor's Signature

_____
Date

ADDITIONAL COMMENTS:

_____

_____

_____

_____

_____

INTERPRETATION OF SYMBOLS AND STUDENT SCORES

PERFORMANCE LEVEL

Proficiency 4:	HIGHLY PROFICIENT: The student can complete task quickly and accurately, can direct others in how to do the task, and needs normal supervision (94%-100%).
Proficiency 3:	COMPETENT: The student can do all parts of task, meets minimum local demands for speed and accuracy, and needs job entry supervision (87%-93%).
Proficiency 2:	PARTIALLY PROFICIENT: The student can do most parts of task, needs help only on hardest parts, may not meet local demands for speed and accuracy, and needs close supervision (79%-86%).
Proficiency 1:	EXTREMELY LIMITED: The student can do simple part of task, needs to be told/shown how to do most of the task, and needs extremely close supervision (70%-78%).
Proficiency 0:	The student's degree of skill is below minimally acceptable performance level (69% or below).

KNOWLEDGE LEVEL

Knowledge Level A:	OPERATING PROFICIENCY: The student can identify, measure, and use troubleshooting techniques to resolve task-related problems and can evaluate conditions and make proper decisions (94%-100%).
Knowledge Level B:	TECHNIQUES AND PRINCIPLES: The student can explain how and when task must be done and why each step is needed, can interpret written and oral instructions, and can analyze facts/principles (87%-93%).
Knowledge Level C:	PROCEDURES: The student can name most steps in task, needs help interpreting written instructions, and can explain basic facts and state general principles (79%-86%).
Knowledge Level D:	NOMENCLATURE: The student can identify parts and tools, and understand simple facts about task, and can identify related basic facts and terms (70%-78%).
Knowledge Level E:	The student's knowledge is below minimally acceptable standard (69% or below).

WORK HABITS AND ETHICS

Level A:	HIGHLY ACCEPTABLE: This is an area in which extraordinary strength is shown.
Level B:	VERY ACCEPTABLE: This is an area in which more than average strength is shown.
Level C:	ACCEPTABLE: This is an area in which average strength is shown.
Level D:	PARTIALLY ACCEPTABLE: This is an area in which some improvement is needed.
Level E:	NOT ACCEPTABLE: This is an area needing considerable improvement.

Page ____ of ____

Name _____ Program Area _____

Course Title _____

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	

Page ____ of ____

Name _____ Program Area _____

Course Title _____

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	

Page _____ of _____

Name _____ Program Area _____

Course Title _____

TASK NO.	TASK/COMPETENCY	PERFORMANCE					KNOWLEDGE					DATE
		4	3	2	1	0	a	b	c	d	e	

Page _____ of _____

Name _____ Program Area _____

Course Title _____

NO.	EDUCATION/TECHNICAL KNOWLEDGE/ JOB PHYSICAL PROFILE Examples: 1. Uses instructions furnished in written or oral form 2. Able to use fingers, hands, arms to reach, handle,	PERFORMANCE					KNOWLEDGE				
		4	3	2	1	0	a	b	c	d	e

NO.	WORK HABITS AND ETHICS Examples: 1. Accepts constructive criticism 2. Demonstrates correct safety practices	WORK HABITS AND ETHICS				
		A	B	C	D	E

Class Progress Chart -- Type A

CLASS PROGRESS CHART

VOCATIONAL EDUCATION

COMPETENCY-BASED

STUDENT ASSESSMENT

Program Area: Agricultural Business

Course Title: Agricultural Business V

CIP Code No. 01.0101

VA Course No. 8026

INTERPRETATION OF SYMBOLS AND STUDENT SCORES

Proficiency 4: HIGHLY PROFICIENT: The student can complete task quickly and accurately, can direct others in how to do the task, and needs normal supervision (94%-100%).

Proficiency 3: COMPETENT: The student can do all parts of task, meets minimum local demands for speed and accuracy, and needs job-entry supervision (87%-93%).

Proficiency 2: PARTIALLY PROFICIENT: The student can do most parts of task, needs help only on hardest parts, may not meet local demands for speed and accuracy, and needs close supervision (79%-86%).

Proficiency 1: EXTREMELY LIMITED: The student can do simple parts of task, and needs extremely close supervision (70%-78%).

Proficiency 0: The student's degree of skill is below minimally acceptable performance level (69% or below).

PROGRAM AREA Agricultural Business	DUTY/CONCEPT AREA:						
	TASKS						
COURSE TITLE Agricultural Business V	3.7 Maintain an accurate inventory	3.8 Identify traits of profitable farmer	3.9 Use business goals for preparing budget	3.10 Define business terms	3.11 Lay out employee's weekly schedule	3.12 Evaluate employee's performance	3.13 List real estate tax regulations
VA. COURSE NO. 8026							
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

PROGRAM AREA: Agricultural Business	DUTY/CONCEPT AREA:						
COURSE TITLE: Agricultural Business V	TASKS						
VA. COURSE NO.: 8026	3.14 Interpret a financial statement	3.15 Establish retail prices	3.16 Prepare income and expense budget	4.14 Plan and present a sales promotion meeting	5.8 Make a follow-up call or visit	5.9 Develop sales effort master plan	5.10 Develop a legal sales contract
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

PROGRAM AREA Agricultural Business	DUTY/CONCEPT AREA:						
	TASKS						
COURSE TITLE Agricultural Business V	5.11 Analyze salesperson's performance	5.12 Demonstrate creative selling techniques	13.9 Recommend kinds and rates of chemicals to use	13.10 Mix chemicals and carrying agents	13.12 Repair sprayer pump	13.13 Recognize symptoms of pesticide damage	6.1 Interpret state labor laws
VA. COURSE NO. 8026							
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

PROGRAM AREA: Agricultural Business	DUTY/CONCEPT AREA:						
COURSE TITLE: Agricultural Business V	TASKS						
VA. COURSE NO.: 8026	7.3 Prepare customer account statements	7.4 Prepare written report	7.5 Prepare letters to customers	8.4 Identify factors influencing production	8.5 Determine transportation for product	9.12 Use grain grading equipment	9.13 Operate grain heat detecting devices
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

PROGRAM AREA: Agricultural Business	DUTY/CONCEPT AREA:						
COURSE TITLE: Agricultural Business V	TASKS						
VA. COURSE NO.: 8026	9.14 Plan a mechanical feeding system	9.15 Develop machinery program plan	10.14 Determine hybrid seed corn selection criteria	10.15 Develop crop program budget	10.16 Develop crop marketing plan	10.17 Develop plan for irrigation system	12.1 Balance rations
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

PROGRAM AREA Agricultural Business	DUTY/CONCEPT AREA:						
COURSE TITLE Agricultural Business V	TASKS						
VA. COURSE NO. 8026	12.2 Recommend livestock additives and medications	12.3 Formulate feeds	12.4 Evaluate livestock quality and recommend feeding program	12.5 Compute feed requirements	12.6 Trace digestive passage of feed		
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

Class Progress Chart -- Type A

C L A S S P R O G R E S S C H A R T

VOCATIONAL EDUCATION

COMPETENCY-BASED

STUDENT ASSESSMENT

Program Area: _____

Course Title: _____

CIP Code No. _____

VA Course No. _____

INTERPRETATION OF SYMBOLS AND STUDENT SCORES

Proficiency 4: HIGHLY PROFICIENT: The student can complete task quickly and accurately, can direct others in how to do the task, and needs normal supervision (94%-100%).

Proficiency 3: COMPETENT: The student can do all parts of task, meets minimum local demands for speed and accuracy, and needs job-entry supervision (87%-93%).

Proficiency 2: PARTIALLY PROFICIENT: The student can do most parts of task, needs help only on hardest parts, may not meet local demands for speed and accuracy, and needs close supervision (79%-86%).

Proficiency 1: EXTREMELY LIMITED: The student can do simple parts of task, and needs extremely close supervision (70%-78%).

Proficiency 0: The student's degree of skill is below minimally acceptable performance level (69% or below).

	DUTY/CONCEPT AREA:						
	TASKS						
PROGRAM AREA							
COURSE TITLE							
VA. COURSE NO.							
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

	DUTY/CONCEPT AREA:						
	TASKS						
PROGRAM AREA							
COURSE TITLE							
VA. COURSE NO.							
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

	DUTY/CONCEPT AREA:						
	TASKS						
PROGRAM AREA							
COURSE TITLE							
VA. COURSE NO.							
Students							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							

VOCATIONAL EDUCATION PROGRESS CHART

SCHOOL _____

COURSE Ag. Bus. V (8026)

GRADING PERIOD _____

INSTRUCTOR _____

NO.	STUDENTS' NAMES	3.7 Inventory maintenance	3.8 Traits of profitable farmer	3.9 Goals in budgeting	3.10 Business terms	3.11 Employee's weekly schedule	3.12 Employee's performance	3.13 Tax regulations	3.14 Financial statement	3.15 Retail prices	3.16 Income and expense budget	4.14 Plan sales meeting	5.8 Follow-up call or visit	5.9 Sales master plan	5.10 Legal sales contract	REMARKS

VOCATIONAL EDUCATION PROGRESS CHART

SCHOOL _____

COURSE Ag. Bus. V (8026)

GRADING PERIOD _____

INSTRUCTOR _____

NO.	STUDENTS' NAMES	5.11 Salesperson performance	5.12 Creative selling techniques	13.9 Kinds/rates of chemicals	13.10 Mix chemicals/carrying agents	13.11 Procedures for pesticide poisoning	13.12 Sprayer pump repair	13.13 Symptoms of pesticide damage	6.1 State labor laws	7.3 Customer account statements	7.4 Written report	7.5 Letters to customers	8.4 Influences on production	8.5 Transportation	9.12 Grain grading equipment	REMARKS

VOCATIONAL EDUCATION PROGRESS CHART

SCHOOL _____

COURSE Ag. Bus. V (8026)

GRADING PERIOD _____

INSTRUCTOR _____

NO.	STUDENTS' NAMES	9.13 Grain heat detecting devices	9.14 Mechanical feeding system	9.15 Machinery program plan	10.14 Hybrid seed corn selection	10.15 Crop program budget	10.16 Crop marketing plan	10.17 Irrigation system plan	12.1 Rations	12.2 Livestock additives/medications	12.3 Feeds	12.4 Livestock quality/feeding program	12.5 Feed requirements	12.6 Digestive passage of feed	REMARKS

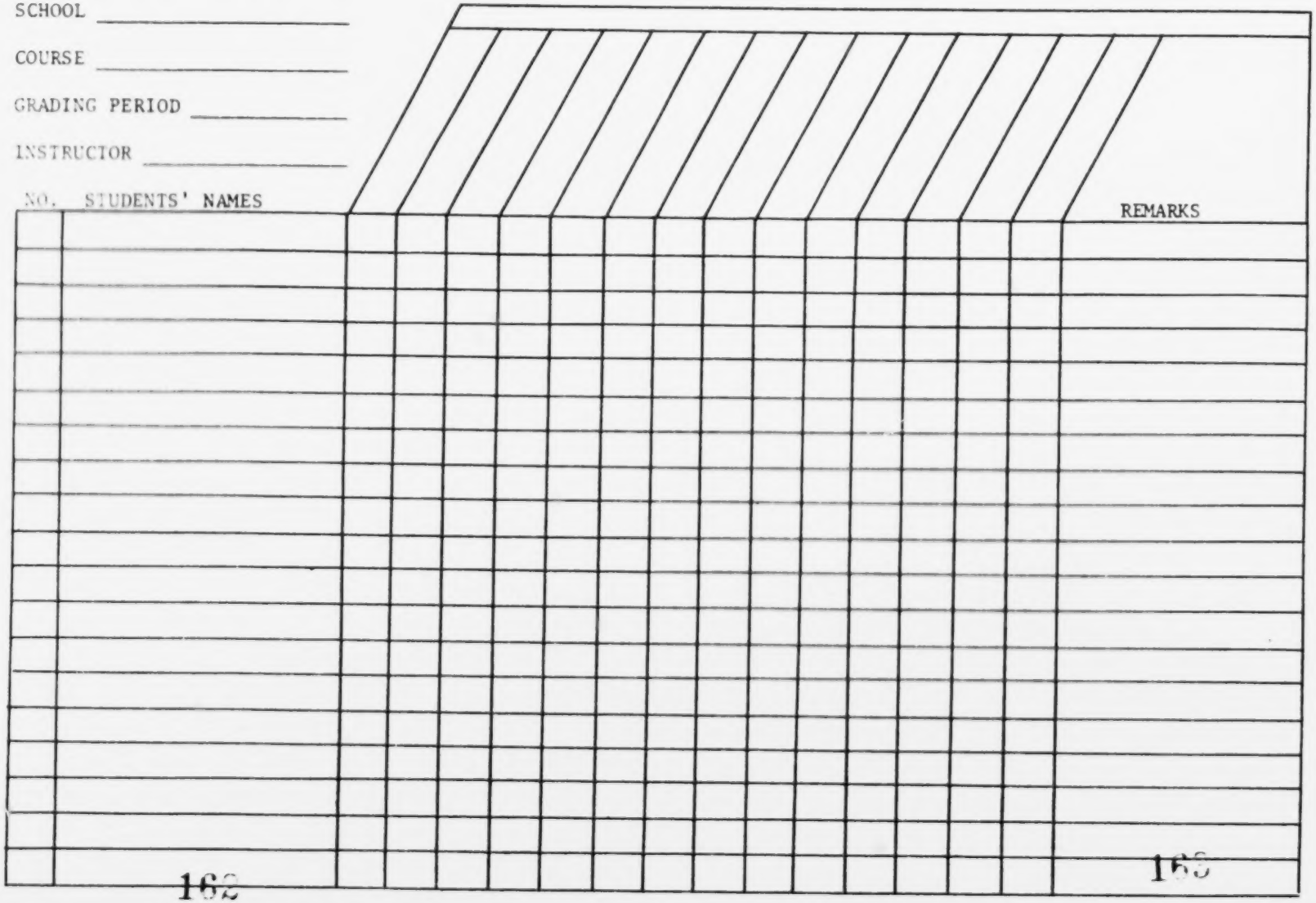
VOCATIONAL EDUCATION PROGRESS CHART

SCHOOL _____

COURSE _____

GRADING PERIOD _____

INSTRUCTOR _____



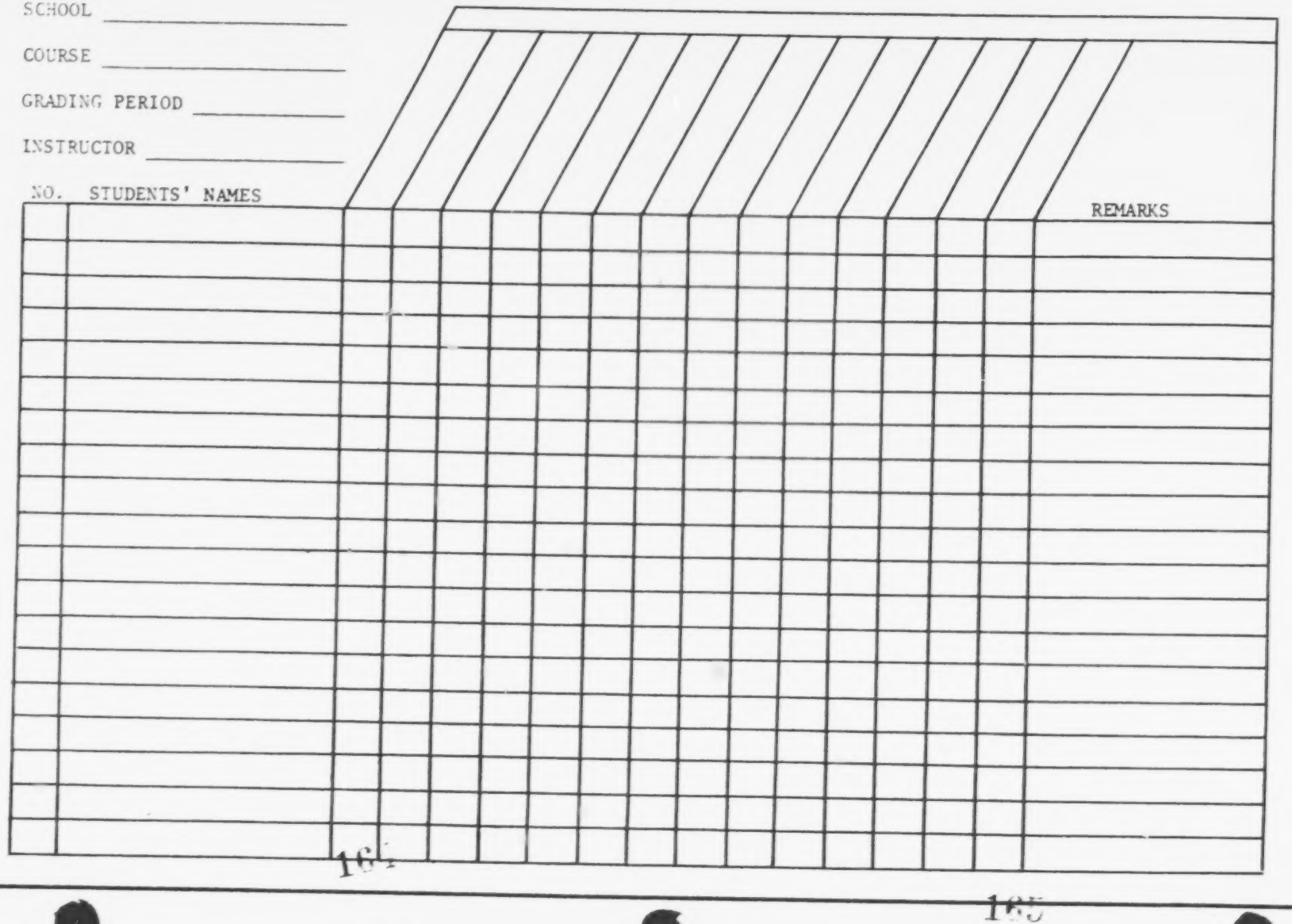
VOCATIONAL EDUCATION PROGRESS CHART

SCHOOL _____

COURSE _____

GRADING PERIOD _____

INSTRUCTOR _____



BIBLIOGRAPHY

Horne, Ralph A. Guide for Implementing Competency-Based Education in Vocational Programs. Richmond, Virginia: Virginia Department of Education, Divisions of Vocational and Adult Education, 1981.

A Planning Guide for Agricultural Education Programs in Virginia's Public Schools. Richmond, Virginia: Virginia Department of Education, Divisions of Vocational and Adult Education, Revised 1981.

U.S. Department of Labor, Bureau of Labor Statistics. Occupational Outlook Handbook, 1980-81 ed. Washington, D.C.: Government Printing Office, 1980.

U.S. Department of Labor, Employment and Training Administration. Dictionary of Occupational Titles, 4th ed. Washington, D.C.: Government Printing Office, 1977.

As required by federal laws and regulations, the Virginia Department of Education does not discriminate on the basis of sex, color, race, religion, handicapping conditions, or national origin in employment or in its educational programs and activities.

The activity which is the subject of this report was supported in whole or in part by the U. S. Department of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the U. S. Department of Education, and no official endorsement by the U. S. Department of Education should be inferred.